COMPUTER SERVICES PRICING IN FRANCE

INPUT EUROPE

ABOUT INPUT

INPUT provides planning information, analysis, and recommendations to managers and executives in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions. Continuing services are provided to users and vendors of computers, communications, and office products and services

The company carries out continuous and in-depth research. Working closely with clients on important issues, INPUT's staff members analyse and interpret the research data, then develop recommendations and innovate ideas to meet client's needs. Clients receive reports, presentations, access to data on which analyses are based, and continuous consulting.

Many of INPUT's professional staff members have nearly 20 years experience in
their areas of
operations, ma
practical sol

management positions in
nables INPUT to supply

YE-CIST
FRA
CUSTOM STUDY 01
AUTHOR
Computer Services Pricing in
TITLE
France.

Formed in
Clients incl
companies.

onal consulting firm.
technically advanced

EUROPE
INPUT E
Empire I
414 Chis
London
England
London
Telex 8

ITALY
PGP Sis
20127 M
Via Sope
Italy
Milan 2

BELGIU
CPMI S.
75 rue d
1420 Braine L'Alleud
Belgium
(02) 736-0054

ES, West Coast
shore Boulevard,

ifornia 94303

ES, East Coast
West-1
New Jersey 07662

Service Company, Ltd
ing, No 12-7 Kita Aoyama
to-Ku

AUSTRALIA
Infocom Australia
Highland Centre, 7-9 Merriwa Street
P.O. Box 110, Gordon N.S.W. 2072
(02) 498-8199

COMPUTER SERVICES PRICING

IN FRANCE

INPUT LIBRARY

INPUT

COMPUTER SERVICES PRICING

IN FRANCE

Digitized by the Internet Archive
in 2015

https://archive.org/details/computerservicesunse_1

TABLE OF CONTENTS

SECTION PAGE

I. INTRODUCTION 1

II. EXECUTIVE SUMMARY 5
- A. Absence of Pricing Standards 5
- B. French Pricing 7
- C. Efficiency and Costs 7
- D. Discounting 9

III. VENDOR PRICING ANALYSIS

- Benchmark Results N22 18
- Benchmark Results N24 30
- Benchmark Results N27 42
- Benchmark Results N28 50
- Benchmark Result TS/1 51
- Benchmark Results TS/2 52

IV VENDOR ANALYSIS

- A. ALLIANCE INFORMATIQUE 53
- B. ARTEMIS S.A. 60
- C. COGID DEPARTMENT GESTION 65
- D. CONTROL DATA - CYBERNET SERVICES 69
- E. CSS FRANCE 75
- F. FRANLAB INFORMATIQUE 81
- G. GENERAL ELECTRIC INFORMATION SERVICES S.A. 89
- H. GSI GENERALE DE SERVICE INFORMATIQUE 96
- I. COMPAGNIE IBM FRANCE 105
- J. SOCIETE GENERALE DE SERVICE ET DE GESTION (SG2) 114
- K. SOCIETE POUR L'INFORMATIQUE 122
- L. SLIGOS 128
- M. SYSTEMES DE TELECOMMUNICATIONS ET D'INFORMATIQUE 134

V. APPENDIX/VENDOR TARIFFS

SECTION I. INTRODUCTION

SECTION I. INTRODUCTION

SECTION I. INTRODUCTION

- This report was produced as a result of a client's request to evaluate the cost of transferring his programs from the current supplier of computer services to another (competitor). In order to evaluate the cost (and performance) of this change benchmarks were run with three programmes.

- The two FORTRAN programmes used, N22 and N24, and the PL/1, Assembler, SORT programme group all ran satisfactorily and full results are included here. (It should be noted that the client uses an outdated FORTAN (FORTRAN H) and that usually FORTRAN-H extended had to be used at the other computer services companies).

- The computer listings of each of the benchmark runs were far too voluminous to be appended to the report; however, summary results have been included for those wishing to examine the details of each run. The marketing and technical documentation obtained from the suppliers has been excluded from the report but company profiles on each of the fifteen suppliers analysed are included.

- Although not sollicited to do so, INPUT decided to carry out a verification, by hand, of the computer-based costing of a job. This was to verify that invoices that are based on the computer data are valid.

- INPUT chose CISI as an example, and the results showed that the computer print out does not allow for the set-up costs, which, in the run examined, were 17% of the total charge. This is an indication of the kind of oversight that can be very costly to both user and vendor. The full CISI results are given in Exhibit I-1.

EXHIBIT I - 1

CISI SAMPLE COSTING

JOB N24

Job Data

Step	Tcp	TI/O	M(v)
1	.29	.50	296
2	.37	1.90	152
3	3.62	12.19	32
4	14.07	26.81	296

Constants

a	b	c	d
3.843	.211	.05	14
3.590	.197	.05	14
3.500	.192	.05	14
3.843	.211	.05	14

- The constants are derived as follows:

$M \leq 100$	$a = 3.5$
$100 < M \leq 500$	$a = 3.5 + .7\ (M-100)/400$
$5000 < M \leq 1000$	$a = 4.2 + 2.1\ (M-500)/500$
$1000 < M$	$a = 6.3 + 11.2\ (M-1000)/1500$

Now $b = 0.055a$

And $c = 0.05$

And $d = 14$

- Units of change = Tf.

Where $Tf = \left(\sum_{stages} \left(1.045\ a\ Tcp + b\ Tlo + cD'\ (Tcp + Tlo) \right) + d\ \ Nb \right.$

Where Tcp = CPU time for Job (excluding CPU for system)
T1/o = CPU time for Input Output activity
Nb = Number of mountings of tapes
D = Number of units of disc used
Nd = Number of mountings of mountings of disc packs

If $D = 0 \quad D' = 0$
$D \geq 1 \quad D' = 3D - 2$

- Job charge is job price 'P' per unit of charge x Tf.
The minimum chargeable is = 5 + 10 Nb + 40 Nd units

Cont'd.....2

- Hence Units per stage:

Tf1 = 1.045 x 3.843 x 0.29 + 0.211 x 0.50 = 1.16 + 0.105 = 1.265

Tf2 = 1.045 x 3.590 x 0.37 + 0.197 x 1.90 = 1.38 + 0.375 = 1.755

Tf3 = 1.045 x 3.500 x 3.62 + 0.192 x 12.19 = 13.24 + 2.34 = 15.580

Tf4 = 1.045 x 3.843 x 14.07 + 0.211 x 26.81 = 56.50 + 5.65 = 62.150

$$\sum_{f=4}^{f=1} Tf = 72.20 + 8.47 = 80.67 \text{ units}$$

- The set up charge, in addition, is:

d x Nb = 14 units

- Hence the total cost is:

	FHT
Processing	72.20
I/O	8.47
Set up	14.00
	94.67 (at 2.99 FHT/Unit)

- Result.

The computer print out does not allow for the set up cost.

- This report provides, through the benchmark run data, the company analyses and the tariffs, a clear picture of the pricing habits of French Computer Services companies and a precise (though limited) comparison of the cost/performance obtainable from most of the major suppliers on the French market.

- Client comments on the content of this report are welcomed.

SECTION II. EXECUTIVE SUMMARY

SECTION II. EXECUTIVE SUMMARY

SECTION II. EXECUTIVE SUMMARY

- From the outset it should be realised that the benchmarks analysed in this report provide a partial view only of the pricing structure of the vendors analysed.

- In each case, given that the computer hardware, operating system, version of language/compiler, sort etc all vary considerably, it is normal to find pricing differences in the job runs - the more efficient the hardware/software combination the cheaper (usually, though not always) the cost of the run for the user.

- Exhibit II-1 summarises these parameters for each of the vendors analysed.

A. ABSENCE OF PRICING STANDARDS

- The absence of any computer services industry leader with a dominant position, (equivalent to IBM in the computer equipment industry), means that there are no pricing standards by which to judge the "market level" of a given user service.

- Basically, vendors charge what they want, within reason, for non-standard (or specific) applications. Only in machine time sales is there a semblance of "going rate" (e.g. for an hour of machine time).

MACHINES & SOFTWARE USED FOR BENCHMARKS

	COMPANY	MACHINE & MODEL	OPERATING SYSTEM	FORTRAN	PL/1 OPTIMISING	SORT	TS SOFTWARE USED
1	Alliance	370/158 - 3	MVS	H - R21.7	V2.2 PTF59	Syncsort	*
2	Artemis	370/158 - 3	HASP II	H - R21.7	V1-R3.OPTF63	SM1R3 PTF31	*
3	CDC	CYBER 74	Scope	4.6+433B	*	*	*
		CYBER 175	NOS	*	*	*	NOS
4	Gegi/Tymshare	-	REFUSAL	-	-	-	-
5	Cogid	370/158 - 1	VS2 - R37	H EXT L2.1	V1-R3.O-PTF64	-	-
6	CSS France	Amdahl V6	*	*	*	*	-
7	Franlab	7600	Scope 2.1	4.6 + 446	*	*	*
8	Geis	N/A	N/A	N/A	N/A	N/A	N/A
9	GSI-CSInf.	370/158 - 1	HASP II	IVG-L21		Syncsort	*
10	IBM	370/168	VS2 R 3.7	HEXT L2.1	V1-R3-PTF65	SMI-R 2.1	*
11	SLIGOS	*	*	*	*	*	*
12	SPI	3032	VS2 R.3.7	HEXT-L2.2.1		CA SORT	*
13	TELESYSTEMES	CYBER 73			*	*	*
14	TELSYS	ITEL AS6	OSV-VSI	HEXT-L2	V1-R3-PTF67	SMI-R3-PTF36	*

* Not applicable for the jobs run.

- Whereas for specific applications the variance is towards how high the vendor can raise charges before disturbing the client, raw time sales tend to be an area of highly competitive discounting of machine time that has been amortized on other activities.

- However, some vendors refuse to enter into price cutting for activities they are not interested in. GSI, for example, has no interest in time sales, (such as for the benchmarks that were run) and was not very concerned about the level of price charged by others for the same job. As a result, some of the GSI prices are very high, which is not a true reflection of GSI's competitiveness in the French computer services market.

B. FRENCH PRICING

- In France, pricing for Computer Services has little to do with performance. In general, bureaux charge widely varying prices for identical services, with little to fear from customer back-lash.

- Thus Computer Services vendors, as a rule, charge customers at a level compatible with their status in the market. The more important the status the higher the price that can be charged. This is evidenced by the appearance of the GSI, IBM, CISI group near the top of all price comparisons (see Section III).

- It is a matter of company policy as to when pricing changes occur for a given service but it is probable that a 10%-15% increase could be made, without any noticeable impact on the customer base.

C. EFFICIENCY AND COSTS

- There are some interesting anomalies that were raised by the benchmarks, not least of which is the realisation that prices can vary, for an identical job, despite the fact that the same model/make of machine, version of operating system, version of assembler etc are used.

- For example in job N27 (SORT, PL/1 and Assembler), the comparison of CISI with IBM shows:

	CISI	IBM
Machine	IBM 370/168-3	Same
Operating system	VS2 R 3.7	Same
Assembler	PL1 optimising VI R3.0 PTF 65	Same
SORT	SMI R 2.1	Same

BUT (for 4 steps)

	CISI	IBM
CPU time (secs)	35.68	15.27
I/O time (secs)	N/A	107.28
Disk/tape accesses	7,264	4,317

- Unfortunately,the costs could not be directly compared because the IBM run completed only four steps (rather than the full 9 for CISI) so that the CISI cost of 885FHT looks high.

- What this does raise is the efficiency of the job organisation and I/O in the CISI run which can be apparently improved on the same combination of hardware/OS/assembler/sort by a factor of almost 2.

- Presumably each run could be slightly improved by more careful programme planning by each vendor's technical staff, but the IBM run time was achieved with no particular effort on the part of the systems staff.

D. DISCOUNTING

- The principles of pricing and discounting vary very considerably from one supplier to another although most of the IBM-based vendors use the same basic method to determine a basic "Unit of Charge". However once a unit of charge has been derived, different rates are applied for:

  - different machines
  - different levels of daytime/nightime priority of turnaround.

- Not all bureaux operate a variable charging system. Telsys and Franlab, for example, have one basic rate of charge regardless of what turnaround constraints exist. For those companies which modulate the tariff according to priority, the tariff increases by a factor of up to 2 with respect to the normal rate.

- Discounting information is extremely difficult to obtain in view of the commercial significance attached to such information. Most firms do not give hard information before discussing service needs in considerable detail and like to operate on a customer by customer basis. However, discounts for business volumes in excess of IMF of sales per annum can be between 20 and 40 percent.

- The complete tariffs, with discount information (where it could be obtained) is given in Appendix-A of this report.

- The data is so detailed, that each one needs to be looked at individually to see its characteristics and principles.

SECTION III. VENDOR PRICING ANALYSIS

SECTION III. VENDOR PRICING ANALYSIS

SECTION III VENDOR PRICING ANALYSIS

- As an industry, the Computer Services Industry has achieved very little standardisation of product quality, service, delivery and price. Most visible amongst these from the users' standpoint is pricing, the variance of which is staggering.

- While it is justifiable for vendors to offer unique applications at varying prices, it is not justifiable for the cost of indentical services to vary by a factor of five.

- INPUT carried out a series of benchmarks of major computer service vendors in France using basic function packages such as Fortran compile and go, PL/1, Assembler and Sort etc.

- The results of these benchmarks are included in this section as examples of how little standardisation exists in bureaux pricing.

- Job 22 - Fortran compile and go - shows a variance of 4.2 to 1. While it is admitted that GSI (the most expensive) is not very interested in selling this kind of service, price variances such as these cannot be justified.

- Job 24 - Fortran compilation - shows an even wider variance: 4.6 to 1. For such a basic function, one would anticipate that competition would gradually eliminate large differences. This is not so.

JOB CHARGE SUMMARY
BASED ON NORMAL DAILY RATES

FORTRAN COMPILE AND GO - N22

RANK	COMPANY	PRICE FHT
1	GSI	1442
2	Telesystemes	1168
3	CISI	655
4	SPI	636
5	FRANLAB	625
6	Artemis	555
7	CDC	541
8	Alliance Informatique	345
AVERAGE	ALL	754

Exhibit 1.

JOB CHARGE SUMMARY
BASED ON NORMAL DAILY RATES

FORTRAN COMPILATION - N24

RANK	COMPANY	PRICE FHT
1	IBM	373
2	ARTEMIS	339
3	CISI	242
4	Alliance Informatique	221
5	GSI	200
6	CDC	176
7	SPI	169
8	FRANLAB	165
9	Telsys	133
10	Telesystemes	80
11	COGID	75 *
AVERAGE	ALL	191

Exhibit 2.

* Prices at non-standard tariff.

JOB CHARGE SUMMARY
BASED ON NORMAL DAILY RATES

SORT, PL/1 and ASSEMBLER - N27

RANK	COMPANY	PRICE FHT
1	CISI	885
2	Artemis	689
3	IBM	609 +
4	GSI	609
5	SPI	420
6	Alliance Informatique	411
7	Telsys	322
8	COGID	213 * +
AVERAGE	ALL	483

Exhibit 3.

*	prices at non-standard tariff.
+	uncomplete job

- Job 27 - Sort, PL/1, and Assembler - the variance is less 3.2 to 1 but again the difference cannot be justified merely on the basis of better hardware/software.

- The conclusions that can be drawn are:

  - users do not appear to be aware of competitive conditions offered by services vendors or are reluctant to change even if they do become aware.

  - vendors can change prices that are equivalent to their status in the market; it cannot be a coincidence that CISI, IBM and GSI all figure prominently as the most expensive services suppliers.

  - it is unlikely that any major impact on customers would occur if prices were raised by 10 - 15%; in fact it would be interesting to evaluate how resistant customers are to price rises (beyond the usual verbal complaints) since this has a direct impact on vendor's revenue and profit.

BENCHMARK RESULTS

N22

BENCHMARK RESULTS

N22

BENCHMARK RESULTS

JOB NO.	N22	COMPANY	ALLIANCE
MACHINE	370/158 -	OPERATING SYSTEM	M V S
LANGUAGE	FORTRAN 1 + R 21.7	SORT	N/A

RESULTS

CPU TIME JOB (SEC)	185.19
I/O TIME (SEC)	NP
DISK/TAPE ACCESSES (No)	536
MEMORY USED	32 KB < M < 384 KB
CARDS READ	45
LINES PRINTED	2116
STEPS EXECUTED	6
EXECUTION TIME (Ms)	7.73
MEMORY RETENTION	

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIME)
		DISK	TAPE	JOB	SYS	TOT		
1	FORT	6	-	1.31	.40	1.71	384	
2	LKED	97	-	1.43	.33	1.76	196	
3	GO	51	52	2.70	.35	3,05	32	
4	FORT	174	-	18.57	2.87	21.44	384	
5	LKED	116	-	1.66	.38	2,04	196	
6	GO	-	40	159.52	1,64	161,16	140	
7								
8								
9								
10								
TOTALS		444	92	185.19	5.97	191.16		

JOB CHARGES UNITS OF CHARGE = 979

CLASS	SERVICE	FHT/UC	U/CS	FACTOR	COST FHT
E	NIGHT	0.40	979	0.8	313.28
D	4 HR	0.44	979	0.8	345.61

N P : Not printed on job results.

BENCHMARK RESULTS

JOB NO.	N22	COMPANY	ARTEMIS
MACHINE	370/158 - 3	OPERATING SYSTEM	HASP II
LANGUAGE	FORTRAN H R 21.7	SORT	N/A

RESULTS

CPU TIME JOB (SEC)	158.13
I/O TIME (SEC)	13.65
DISK/TAPE ACCESSES (NO)	NP
MEMORY USED	36 K < M < 256 K
CARDS READ	51
LINES PRINTED	1326
STEPT EXECUTED	7
EXECUTION TIME (MINS)	5.21

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIME
		DISK	TAPE	JOB	SYS	TOT		
1	FORT	NP	NP	0.76	NP	NP	256	
2	LKED	"	"	0.87	"	"	256	
3	GO	"	"	2.14	"	"	36	
4	-	-	-	0.02	"	"	8	
5	LKED	"	"	1.39	"	"	256	
6	GO	"	"	142.09	"	"	148	
7								
8								
9								
10								
TOTALS				158.13				

JOB CHARGES

CHARGE	DAY TARIFF	NIGHT TARIFF
FIXED CHARGE	11.80	11.80
CARD READING	.48	.48
PRINTING	14.45	14.45
PROCESSING	527.93	263.95
TOTAL:	554.66	290.68

N P : Not printed on job results.

JOB NO.	N22	COMPANY	CDC
MACHINE	CYBER 74	OPERATING SYSTEM	SCOPE 3.43 - 406F 255
LANGUAGE	FORTRAN 4.6 + 433B	SORT	

RESULTS

COMPILATION TIME		3,25	CP SEC
OUTPUT -	(10 DBS)	67	
	(DC)	40	
INPUT -	(10 DBS)	1	
	(DC)	0	
EXECUTION TIME	(ISSW)	223.611	
MEMORY	(MS)	10,752	WORDS
	(CPA)	184.31	SEC
	(IO)	13.10	
MEMORY USAGE	(CM)	5,993	KWS
	(PP)	51.406	SECS
BILLABLE UNITS		477.052	SBUS

JOB CHARGES

SERVICE	RATE FHT/UC	UNITS CHARGED	CHARGE FHT
I/O	0.25	68	17.00
TAPES MOUNTED	5.65	1	5.65
SUB TOTAL:	-	-	22.65
PROCESS			
ECONOMY	0.523	477.052	249.50
24 HOUR	0.826	"	394.04
STANDARD	1.087	"	518.55
EXPRESS	1.324	"	631.62
SUPER	1.570	"	748.97

BENCHMARK RESULTS

Job No N 22	COMPANY CISI
Machine 370/168 - 3	OPERATING SYSTEM VS2 R 3.70
LANGUAGES USED FORTRAN 1 + R 21.7	SORT UTILITY

SUMMARY OF RESULTS

CPU TIME JOB (SEC)	50.07
I/O TIME (SEC)?	13.08
DISK/TAPE ACCESSES (No)	362
MEMORY USED	32 K < M < 296 K
STEPS EXECUTED	6
EXECTION TIME (Mins)	7.73

JOB DETAILS FOR IBM

STEP	ACTIVITY	I/O ACCESSES DISK	I/O ACCESSES TAPE	CPU TIME (Sec) JOB	CPU TIME (Sec) SYS	CPU TIME (Sec) TOTAL	VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB x SEC)
1	FORT	1	-	.32	.50	.82	296	242.72
2	LKED	13	-	.38	.06	.44	152	60.88
3	GO	51	52	.88	.08	.96	32	30.72
4	FORT	55	-	3.87	.35	4.22	296	1249.12
5	LKED	90	-	.43	.08	.51	152	77.52
6	GO	-	40	44.19	.04	44.23	144	6369.12
7								
8								
9								
10								
TOTALS		270	92	50.07	.66	50.73	-	8036.08

JOB CHARGE

SERVICE	RATE PER U/C	UNITS CHARGED	COST FHT
Express	4.01	219.0	878.19
Standard	2.99	219.0	654.80
Night	2.40	219.0	525.60

NP : Not printed on job results

No N 22	COMPANY CISI
hine 7600	OPERATING SYSTEM SCOPE

GUAGES USED FORTRAN 4.7 + 470

LITIES

MARY OF RESULTS

```
1.180 CP SECS COMPILATION TIME
34.251 CP SECS EXECUTION TIME
SCM        1 098.719 KWS
LCM          176.031 KWS
I/O            0.201 MW
RMS            1.259 MWS
TAPE           1.000 VOL
USER          34.783 SEC
JOB           39.428 SEC
DIO          634.423 KW
SIO          267.936 KW
NIO          275.000 E/S
TIO           22.401 SEC
COST          56.650 UC
SCo50 - 000003 SC/LC SWAPS
SC055 - 074600B WORDS OF MAX SCM ALLOCATION
SC056 - 141000B WORDS OF MAX LCM ALLOCATION
```

CHARGE

SERVICE	RATE FHT/UC	UNITS CHARGED	CHARGE FHT
Express	14.98	56.65	848.6
Standard	11.18	56.65	633.3
Night	8.84	56.65	506.04

BENCHMARK RESULTS

JOB NO.	N22	COMPANY	COGID
MACHINE	370/158	OPERATING SYSTEM	VS2 R 3.7
LANGUAGE	FORTRAN H EXT L 2.1	SORT	N/A

RESULTS

CPU TIME JOB (SEC)	15.47
I/O TIME (SEC)	NOT GIVEN
DISK/TAPE ACCESSES (NO)	301
MEMORY USED	36 K <M <320 K
CARD READ	47
LINES PRINTED	1599
STEPS EXECUTED	4
EXECUTION TIME (MINS)	5.77

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIME
		DISK	TAPE	JOB	SYS	TOT		
1	FORT	-	1	1.12	.18	1.30	320	416.00
2	LKED	146		1.37	.42	1.79	96	171.84
3	GO	51		2.24	.38	2.69	36	94.32
4	FORT	52	51	10.74	1.49	12.23	320	3913.60
5								
6								
7								
8								
9								
10								
TOTALS		249	52	15.47	2.47	17.94	-	4595.76

JOB CHARGES

ITEM	USAGE	TI		T2		T3	
		RATE	COST	RATE	COST	RATE	COST
CPU	17.94					.66	11.84
MEMORY RETENT.	4595.76	.00283	13.01	.00220	10.11	.00157	7.22
I/O DISK	249	.01355	3.37	.01141	2.84	.00998	2.49
I/O TAPE	52					.0067	0.35
TOTALS:	-	-		-			21.90

N P : Not printed on job results

JOB NO.	N22	COMPANY	FRANLAB
MACHINE	CDC 7600	OPERATING SYSTEM	SCOPE
LANGUAGE	FORTRAN FTN 4.6 + 446	SORT	

RESULTS

COMPILATION TIME (SEC)		1.088
EXECUTION TIME (SEC)		32.037
SCM	(KW)	28.457
LCM	(KW)	.001
I/O	(SEC)	6.311
RMS	(MWS)	.407
USER	(SEC)	32.564
TT	(SEC)	46.268
TS	(SEC)	3.751

JOB CHARGES UNITS CHARGES - 250

SERVICE	RATE FHT/UC	UNITS CHARGED	CHARGE FHT
STANDARD	2.50	250	625.00
ECONOMY	1.875	250	468.75

BENCHMARK RESULTS

JOB NO.	N22	COMPANY	GSI - CS INFORMATIC
MACHINE	370/155-1	OPERATING SYSTEM	HASP II
LANGUAGE	FORTRAN IVG L21	SORT	N/A

RESULTS

CPU SEC JOB (SEC)	508.97
I/O TIME (SEC)	NOT GIVEN
MEMORY USED FROM	60K TO 256K
DISK/TAPE ACCESSES	1178
CARDS READ	45
LINES PRINTED	1316
STEPS EXECUTED	6
EXECUTION TIME (MINS)	48.43

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIM
		DISK	TAPE	JOB	SYS	TOT		
1	FORT	22	-	0.80	NOT GIVEN		100	80.00
2	LKED	160	-	1.37			120	164.40
3	GO	50	53	3.37			60	202.20
4	FORT	355	-	10.46			100	1046.00
5	LKED	591	-	2.60			120	312.00
6	GO	-	41	490.37			256	125534.72
7	N/A							
8	N/A							
9	N/A							
10								
TOTALS		1178	94	508.97			-	127339.32

JOB CHARGES

'Q' = 0.498 (HOURS)

SECONDS = 1793

NORMAL PRICE = .498 x 2900 = 1,444.2 FHT

EXPRESS PRICE = .498 x 3600 = 1,792.8 FHT

REMARKS: JOB COST BASED ON 'Q' HOUR FACTOR

b No N 22	COMPANY IBM	
chine 370/168-3	OPERATING SYSTEM VS2 R3.7	
NGUAGES USED Fortran H Ext L 2.1		SORT UTILITY N.A.

MMARY OF RESULTS

CPU Time Job (SEC) :
I/O Time (SEC) :
Disk/Tape Accesses (NO) :
Memory Used :
Cards Read :
Lines Printed :
Steps Executed :
Execution Time (Mins):

NOT COMPILED

B DETAILS FOR IBM

EP	ACTIVITY	I/O ACCESSES		CPU TIME (Sec)			VIRTUAL	MEMORY
	FORT	DISK	TAPE	JOB	SYS	TOTAL	MEMORY (KB)	RETENTION (KB x SEC)
1								
2								
3								
4								
5								
6								
7								
8								
9								
0								

TALS

B CHARGE

BENCHMARK RESULTS

Job No N22	COMPANY SPI
Machine 3032	OPERATING SYSTEM VS2 R3
LANGUAGES USED FORTRAN H (EXT) 2.2.1	SORT UTILITY N.A.

SUMMARY OF RESULTS

CPU Time Job (Sec) : 101.82
I/O Time (Sec) : Not printed
Disk/Tape Accesses (No) : 1266
Memory Used : 124 K < M < 188 K
Cards Read : 42
Lines Printed : 1372
Steps Executed : 5
Execution Time (Mins) : 2.96

JOB DETAILS FOR IBM

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (Sec)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB x SEC)
		DISK	TAPE	JOB	SYS	TOTAL		
1	FORT	1	-	.26	0.05	0.31	188	
2	GO	222	-	.89	0.18	1.07	128	
3	FORT	407	-	2.11	0.67	2.78	184	
4	LKED	596	-	1.08	0.33	1.41	124	
5	GO	40	-	97.48	0.04	97.52	152	
6								
7								
8								
9								
10								
TOTALS		1266		101.82	1.27	103.09	-	

JOB CHARGE

SERVICE	CHARGE FHT
*Same Day	509
2 Hour	636
1 Hour	764
10 min	1018

ACTIVITY	*Rate RHT/U.C.	U.C.	CHARGE FHT
Lines Printed	1.28	13.03	16.68
Cards Red	1.28	0.42	0.54
Tapes Mounted	1.28	10.00	12.80
Processing	1.28	374.48	479.33
Totals	-	397.93	509.35

BENCHMARK RESULTS

No	N22	COMPANY	TELESYSTEMS
ine	CYBER 73	OPERATING SYSTEM	NOS - B

GUAGES USED FORTRAN

LITIES N/A

MARY OF RESULTS

COMPILE TIME = 7.00 SEC
EXECUTE TIME = 689.00 SEC
CPU TIME = 696.00 SEC
I/O TIME = 4.00 SEC
MEMORY = 140 KB

CHARGE

SERVICE	RATE FHT/UC	UNITS CHARGED	CHARGE FHT
Express	1.168	983	1148
Standard	1.46	983	1435
Night	2.19	983	2153

BENCHMARK RESULTS

Job No N22	COMPANY TELYSYS
Machine AS6	OPERATING SYSTEM OS VS 1
LANGUAGES USED Fortran H Ext - L2	SORT UTILITY

SUMMARY OF RESULTS

CPU Time Job (Sec) : 4.17
I/O Time (Sec) : NP
Disk/Tape Accesses (no): 376
Memory Used : 42 K < M < 278 K
Cards Read : NP
Lines Printed : 887
Steps Executed : 6
Execution Time (Mins) : 16.25

JOB DETAILS FOR IBM

STEP	ACTIVITY	I/O ACCESSES DISK	I/O ACCESSES TAPE	CPU TIME (Sec) JOB	CPU TIME (Sec) SYS	CPU TIME (Sec) TOTAL	VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB x SEC)
1	FORT	323	53	0.32			276	
2	LKED			0.51			162	
3	GO			0.71			42	
4	FORT			2.63			278	
5								
6								
7								
8								
9								
10								
TOTALS		323	53	4.17			-	

JOB CHARGE

ACTIVITY	RATE (FHT/UC)	U.C.	CHARGE FHT
Job Set up	50.00	1	50.00
CPU Sec	3.50	4.17	14.00
I/O Accesses	0.012	376	4.51
Lines Printed	0.004	887	3.55
Total	-	-	72.06

N.P. = NOT PRINTED ON JOB RESULTS

BENCHMARK RESULTS

N24

BENCHMARK RESULTS

ob No	N24	COMPANY	ALLIANCE
achine	370/158 - 3	OPERATING SYSTEM	MVS
ANGUAGES USED	FORTRAN H R 21.7	SORT UTILITY	SYNC SORT

UMMARY OF RESULTS

CPU Time Job (SEC)	:	94.80
I/O Time (SEC)	:	Not Printed
Disk/TAPE Accesses (NO)	:	1493
Memory Used	:	32 K < M < 384 K
Cards Read	:	23
Lines Printed	:	7559
Steps Executed	:	4
Execution Time (Mins)	:	27.14

OB DETAILS FOR IBM

TEP	ACTIVITY	I/O ACCESSES		CPU TIME (Sec)			VIRTUAL	MEMORY
		DISK	TAPE	JOB	SYS	TOTAL	MEMORY (KB)	RETENTION (KB x SEC)
1	FORT	6	-	1.20	0.35	1.55	384	773.42
2	LKED	97	-	1.46	0.35	1.81	196	354.76
3	GO	252	253	11.54	1.24	12.78	32	408.96
4	FORT	885	-	80.60	18.24	98.84	384	37,954.56
5								
6								
7								
8								
9								
10								
OTALS		1240	253	94.80	20.18	114.98	-	39,491.70

OB CHARGE Billable Units Calculated = 628

LASS	Tariff	FHT/U.C	U/Cs	FACTOR	COST FHT
E	NIGHT	0.40	628	0.8	200.96
D	4 HOUR	0.44	628	0.8	221.05

BENCHMARK RESULTS

JOB NO.	N24	COMPANY	ARTEMIS
MACHINE	370/158-3	OPERATING SYSTEM	HASP II
LANGUAGE	FORTRAN H R21.7	SORT	N/A

RESULTS

I/O TIME (SEC)	111.51
MEMORY USED	8 K < M < 256 K
CARDS READ	26
LINES PRINTED	4,632
STEPS EXECUTED	5
EXECUTION TIME (MINS)	5.21

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIME
		DISK	TAPE	JOB	SYS	TOT		
1	FORT	NP	NP	.72	NP	NP	256	N/A
2	LKED	NP	NP	.83	NP	NP	256	
3	GO	NP	NP	9.10	NP	NP	36	
4	-	NP	NP	.02	NP	NP	8	
5	FORT	NP	NP	42.74	NP	NP	256	
6	—							
7								
8								
9								
10								
TOTALS				53.41	NP	NP	-	

JOB CHARGES AT JOB PRIORITY "NORMAL"

CHARGES	DAY	NIGHT
FIXED CHARGE	11.80	11.80
CARD READING	0.24	0.24
PRINTING	50.48	50.48
PROCESSING	228.36	144.18
TOTALS: (FHT)	338.84	206.70

NP NOT PRINTED ON JOB RESULTS
NA NOT APPLICABLE

BENCHMARK RESULTS

JOB NO.	24	COMPANY	CDC
MACHINE	CYBER 74	OPERATING SYSTEM	SCOPE 3.43 - 406 F .255
LANGUAGE	FORTRAN 4.6 + 433B	SORT	

RESULTS

COMPILATION TIME		13.084 CP SECS
OUTPUT IODBS		326
DC		40
INPUT IODBS		1
DC		0
EXECUTION TIME	(ISSW)	235.466
MEMORY	(MS)	43008 WORDS
	(CPA)	13.410
	(IO)	74.018
MEMORY USAGE	(CM)	1047.747 KWS
	(PP)	216.969 SEC

JOB CHARGES

UNITS CHARGED - 81.641 SBUS

NOTE: To obtain total job cost, add sub total 87.30 FHT to price for each service for units charged.

SERVICE	RATE FHT/UC	UNITS CHARGED	CHARGE FHT
Input/Out	0.25	327	81.75
Tapes Mounted	5.65	1	5.65
SUB TOTAL	-	-	87.30
Economy	0.523	81.641	42.70
24 Hour	0.826	"	67.43
Standard	1.087	"	88.74
Express	1.324	"	108.09
Super	1.570	"	128.17

BENCHMARK RESULTS

JOB NO.	N24	COMPANY	CISI
MACHINE	370/168-3	OPERATING SYSTEM	VS2 R3.7
LANGUAGE	FORTRAN H	SORT	

RESULTS

CPU TIME JOB (SEC)	18.35
I/O TIME (SEC)	41.40
DISK/TAPE ACCESSES (NO)	861
MEMORY USED	32 K<M<296 K
CARDS READ	NP
LINES PRINTED	NP
STEPS EXECUTED	4
EXECUTION TIME (MINS)	5.4

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIME
		DISK	TAPE	JOB	SYS.	TOT		
1	FORT	1		.29	.06	.35	296	103.60
2	LKED	73		.37	.07	.44	152	66.88
3	GO	252	253	3.62	.33	3.95	32	126.40
4	FORT	282		14.07	1.90	15.97	296	4,727.12
5								
6								
7								
8								
9								
10								
TOTALS		608	253	18.35	2.36	20.71	-	5,024.00

JOB CHARGES

SERVICE	RATE FHT/UC	UNITS CHARGED	CHARGE FHT
EXPRESS	4.01	81.00	324.81
STANDARD	2.99	81.00	242.19
NIGHT	2.40	81.00	194.40

NP - NOT PRINTED ON JOB RESULTS

BENCHMARK RESULTS

No N 24

COMPANY CISI

ine CDC 7600

OPERATING SYSTEM Scope 2.1

UAGES USED Fortran 4.7 + 470

ITIES -

IARY OF RESULTS

```
5.381 CP SECONDS COMPILATION TIME
SCM                  118.942  KWS
LCM                   26.463  KWS
I/O                    0.293  MW
RMS                    1.254  MWS
TAPE                   1.000  VOL
USER                   2.041  SEC
JOB                    8.888  SEC
DIO                2,387.041  KW
SIO                  267.936  KW
NIO                1,029.000  E/S
TIO                   82.906  SEC
COST                  19.837  UC
SC050 - 000310 SC/LC SWAPS
SC055 - 050400B WORDS OF MAX SCM ALLOCATION
SC056 - 063000B WORDS OF MAX LCM ALLOCATION

** END OF JOB ** NO24CIV
```

CHARGE

SERVICE	RATE FHT/UC	UNITS CHARGED	CHARGE FHT
Express	14.98	19.837	297.16
Standard	11.18	19.837	221.78
Night	8.94	19.837	177.34

BENCHMARK RESULTS

Job No N 24	COMPANY COGID
Machine 370/158-3	OPERATING SYSTEM V52 R3.7
LANGUAGES USED FORTRAN H EXTENDED L 2.1	SORT UTILITY N.A.

SUMMARY OF RESULTS

CPU TIME JON (SEC) : 53.02
I/O TIME (SEC) :
DISK/TAPE ACCESSES (NO) : 904
MEMORY USED : K < M <
CARDS READ : 25
LINES PRINTED : 7851
STEPS EXECUTED : 4
EXECUTION TIME (MINS) : 5.49

JOB DETAILS FOR IBM

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (Sec)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB x SEC)
		DISK	TAPE	JOB	SYS	TOTAL		
1	FORT	-	-	0.90	0.17	1.07	320	342.40
2	LKED	146	-	1.12	0.28	1.40	96	134.40
3	GO	252	253	7.79	0.75	8.54	36	307.44
4	FORT	253	-	43.21	6.65	49.86	320	15,955.20
5								
6								
7								
8								
9								
10								
TOTALS		651	253	53.02	7.85	60.87	-	16,739.44

JOB CHARGE NB COSTS ARE FHT

Ref	Item	USAGE	T1		T2		T3	
			Rate	cost	Rate	cost	Rate	cost
1	CPU Time	60.87					.66	40.17
2	Memory	16739.44	.00283		.00220		.00157	26.28
3	I/O Disk	651	.01355		.01141		.00998	6.49
4	I/O Tape	253					.00670	1.69
	TOTALS							74.63

BENCHMARK RESULTS

JOB NO.	N24	COMPANY	FRANLAB
MACHINE	CDC 7600	OPERATING SYSTEM	SCOPE
LANGUAGE	FORTRAN FTW 4.6 + 446	SORT	N/A

RESULTS

COMPILATION TIME (SEC)		4.71
EXECUTION TIME (SEC)		-
SCM	(KW)	14.207
LCM	(KW)	.001
I/O	(SEC)	11.337
RMS	(MWS)	.477
USER	(SEC)	2.027
TT	(SEC)	9.435
TS	(SEC)	3.751

JOB CHARGES

UNITS CHARGED = 66.

SERVICE	RATE FHT/UC	UC	CHARGE FHT
EXPRESS			
STANDARD	2.50	66	165.00
ECONOMY	1.875	66	123.75

BENCHMARK RESULTS

JOB NO.	N24	COMPANY	GSI
MACHINE	370/155-1	OPERATING SYSTEM	HASP II
LANGUAGE	FORTRAN IVG L21	SORT	N/A

RESULTS

CPU TIME JOB (SEC)	65.06
I/O TIME (SEC)	NP
DISK/TAPE ACCESSES (NO)	2303
MEMORY USED	60 K < M < 120 K
CARDS READ	23
LINES PRINTED	3102
STEPS EXECUTED	4
EXECUTION TIME (MINS)	15.66

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIM
		DISK	TAPE	JOB	SYS	TOT		
1	FORT	21		.93	NP	NP	100	93.00
2	LKED	159		1.38	-	-	120	165.60
3	GO	251	254	13.07	-	-	60	784.20
4	FORT	1818		49.68	-	-	100	4968.00
5								
6								
7								
8								
9								
10								
TOTALS		2249	254	65.06				6010.80

JOB CHARGES

SECONDS EQUIVALENT - = 248 Q = 0.069 HOURS

NORMAL RATE = Q x 2900 FHT = 200.1 FHT

EXPRESS RATE = Q x 3600 FHT = 248.4 FHT

NP - NOT PRINTED ON JOB RESULTS

BENCHMARK RESULTS

JOB NO.	N24	COMPANY	IBM
MACHINE	370/168-3	OPERATING SYSTEM	VS2 R 3.7
LANGUAGE	FORTRAN 1 + (EXT) L 2.1	SORT	N/A

RESULTS

CPU TIME JOB (SEC)	10.38
I/O TIME (SEC)	20.16
DISK/TAPE ACCESSES (NO)	780
MEMORY USED	36 K<M<448 K
CARDS READ	25
LINES PRINTED	3298
STEPS EXECUTED	4
EXECUTION TIME (MINS)	10.85

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIME)
		DISK	TAPE	JOB	SYS	TOT		
1	FORT	-	-	.34	.06	.40	448	
2	LKED	127	-	.59	.10	.69	196	
3	GO	249	251	2.61	.38	2.99	36	
4	FORT	153	-	6.84	1.56	8.40	448	
5								
6								
7								
8								
9								
TOTALS		529	251	10.38	2.10	12.48	-	

JOB CHARGES : NORMAL SERVICE

ACTIVITY	RATE FHT/UC	UNITS UC	CHARGE FHT
PROCESSING	82.55	2.18	179.99
TAPE MOUNTS	56.00	0.50	28.00
CARDS READ	80.00	0.007	.56
PRINTING	97.66	0.758	74.03
CARDS PUNCHED	81.79	1.112	90.96
TOTALS:	-	4.557	373.54

NOT PRINTED ON JOB RESULTS

BENCHMARK RESULTS

JOB NO.	N24	COMPANY	SPI
MACHINE	3032	OPERATING SYSTEM	VS2 R3
LANGUAGE	FORTRAN H (EXT) 2.2.1	SORT	N/A

RESULTS

CPU TIME JOB (SEC)	12.41 SECS
I/O TIME (SEC	NOT GIVEN
DISK/TAPE ACCESSES (NO)	997
MEMORY USED	36 K M 188 K
CARDS READ	25
LINES PRINTED	3507
STEPS EXECUTED	4
EXECUTION TIME (MINS)	1.92

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIM
		DISK	TAPE	JOB	SYS	TOT		
1	FORT	18	-	.26	.07		180	
2	LKED	176	-	.56	.11		124	
3	GO	505	-	2.29	.46		36	
4	FORT	298	-	9.30	1.76		188	
5								
6								
7								
8								
9								
TOTALS		997	-	12.41	2.40			

JOB CHARGES

SERVICE	CHARGE FHT
*SAME DAY	135
2 HOUR	169
1 HOUR	202
10 MINS	270

ACTIVITY	RATE FHT/UC	UC	CHARGE FHT
LINES PRINTED	1.28	33.81	43.28
CARDS READ	1.28	.25	0.32
TAPES MOUNTED	1.28	10.00	12.80
PROCESSING	1.28	61.14	78.26
TOTALS:	-	71.39	134.66

NOT PRINTED ON JOB RESULTS

BENCHMARK RESULTS

JOB NO.	N24	COMPANY	TELSYS
MACHINE	AS 6	OPERATING SYSTEM	OS VSI
LANGUAGE	FORTRAN H (EXT) L 2	SORT	N/A

RESULTS

CPU TIME JOB (SEC)	15.68
I/O TIME (SEC)	NP
DISK/TAPE ACCESSES (NO)	1095
MEMORY USED	40 K < M < 278 K
CARDS READ	NP
LINES PRINTED	3459
STEPS EXECUTED	5
EXECUTION TIME (MINS)	12.83

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIME)
		DISK	TAPE	JOB	SYS	TOT		
1	FORT	)	)	0.32			274	
2	LKED	)	)	0.50			162	
3	GO	)841	)254	2.41			40	
4	FORT	)	)	12.45			278	
5	GO	)	)	-			-	
6								
7								
8								
9								
TOTALS		841	254	15,68			-	

JOB CHARGES

ACTIVITY	RATE FHT/UC	UC	CHARGE FHT
JOB SET UP	50.00	1	50.00
CPU SEC	3.50	15.68	56.00
I/O ACCESSES	0.012	1095	13.14
LINES PRINTED	0.004	3459	13.83
TOTALS:	-	-	132.97

NP - NOT PRINTED ON JOB RESULTS

BENCHMARK RESULTS

JOB NO.	N24	COMPANY	TELESYSTEMES
MACHINE	CDC CYBER 73	OPERATING SYSTEM	SCOPE
LANGUAGE	FORTRAN	SORT	

RESULTS

COMPILE TIME	25 (SEC)
EXECUTE TIME	-
CPU TIME	25 (SEC)
I/O TIME	23 (SEC)
MEMORY	60 KB

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIME
		DISK	TAPE	JOB	SYS	TOT		
TOTALS								

JOB CHARGES

SERVICE	RATE FHT/UC	UC's	CHARG FHT
ECONOMY	1.168	68	79.40
NORMAL	1.46	68	99.28
URGENT	2.19	68	148.92

N/A - NOT APPLICABLE OR NOT PRINTED

BENCHMARK RESULTS

N27

BENCHMARK RESULTS

JOB NO.	N27	COMPANY	ALLIANCE
MACHINE	370/158-1	OPERATING SYSTEM	MVS
LANGUAGE	P/L1 OPTIMISING & ASSEMBLER V.2 2 PTF 59	SORT	SYNCSORT

RESULTS

CPU TIME JOB (SEC)	149.09
I/O TIME (SEC)	NOT PRINTED
DISK/TAPE ACCESSES (NO)	9739
MEMORY USED	100 K<M<252 K
CARDS READ	137
LINES PRINTED	7064
STEPS EXECUTED	9
EXECUTION TIME (MINS)	31.75

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIME)
		DISK	TAPE	JOB	SYS	TOT		
1	SORT	42	3	2.33	0.42	2.75	204	561.00
2	ASSEMBLER	613	64	14.45	1.88	16.33	100	1633.00
3	GO	554	521	6.43	2.92	9.35	152	1421.20
4	PL/1	3685	2351	102.03	15.27	117.30	200	23460.00
5	LKED	230	-	2.36	0.72	3.08	152	468.16
6	GO	500	-	10.58	5.28	15.86	252	3996.72
7	PL/1	2	19	2.76	0.56	3.32	152	504.64
8	LKED	107	-	1.50	0.51	2.01	152	305.52
9	GO	528	520	6.65	2.59	9.24	152	3060.65
TOTALS		6261	3478	149.09	30.15	179.24	-	35410.89

JOB CHARGES CALCULATED BILLING UNITS 1169

CLASS	TARIFF	FHT/UC	UCS	FACTOR	COST (FHT)
E	NIGHT	0.40	1169	0.8	374.08
D	4 HOUR	0.44	1169	0.8	411.49

NOT PRINTED ON JOB RESULTS

BENCHMARK RESULTS

JOB NO.	N27	COMPANY	ARTEMIS
MACHINE	370/158-3	OPERATING SYSTEM	HASP II
LANGUAGE	PL 1 OPTIMISING V1 R3 PTF63 ASSEMBLER	SORT	SM1 R3 PTF31

RESULTS

CPU TIME JOB (SEC)	
I/O TIME (SEC)	339.92
DISK/TAPE ACCESSES (NO)	NP
MEMORY USED	28 K<M<256 K
CARDS READ	69
LINES PRINTED	4204
STEPS EXECUTED	10
EXECUTION TIME (MINS)	11.31

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIME
		DISK	TAPE	JOB	SYS	TOT		
1	SORT	NP	NP	.87			116	
2	ASSEMBLER	"	"	9.66			256	
3	LKED	"	"	.57			256	
4	GO	"	"	2.20			28	
5	PL/1	"	"	44.56			256	
6	LKED	"	"	1.65			200	
7	GO	"	"	5.59			256	
8	PL/1	"	"	1.27			192	
9	LKED	"	"	1.05			192	
10	GO	"	"	2.81			192	
TOTALS		"	"	70.23				

JOB CHARGES

CHARGES	DAY	NIGHT
FIXED CHARGE	11.80	11.80
CARD READING	0.65	0.65
PRINTING	45.82	45.82
PROCESSING	630.50	315.25
TOTALS:	688.77	373.52

NP - NOT PRINTED ON JOB RESULTS
NA - NOT APPLICABLE

BENCHMARK RESULTS

JOB NO.	N27	COMPANY	CISI
MACHINE	370/168-3	OPERATING SYSTEM	VS2 R 3.7
LANGUAGE	PL1 OPTIMISING ASSEMBLER V1 R 3.0 PTF 65	SORT	SM1 R 2.1

RESULTS

CPU TIME JOB (SEC)	52.11
I/O TIME (SEC)	301.10
DISK/TAPE ACCESSES (NO)	11324
MEMORY USED	100 K<M<252 K
CARDS READ	NP
LINES PRINTED	NP
STEPS EXECUTED	9
EXECUTION TIME (MINS)	27.73

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIME)
		DISK	TAPE	JOB	SYS	TOT		
1	SORT	42	419	0.38	0.16	0.54	156	84.24
2	ASSEMBLER	593	60	4.71	0.46	5.17	100	517.00
3	GO	546	516	1.92	0.62	2.54	152	386.08
4	PL/1	4914	2350	28.67	5.27	33.94	200	6788.00
5	LKED	219	-	0.75	0.20	0.95	152	144.40
6	GO	496	-	3.30	1.20	4.50	252	1134.00
7	PL/1	2	19	0.98	0.20	1.18	152	179.36
8	LKED	100	-	0.49	0.11	0.60	152	91.20
9	GO	528	520	2.09	0.60	2.69	152	408.88
TOTALS		7440	3884	43.29	8.82	52.11	-	9733.16

JOB CHARGES

SERVICE	RATE FHT/UC	UNITS CHARGED	CHARGE FHT
EXPRESS	4.01	296.00	1186.96
STANDARD	2.99	296.00	885.00
NIGHT	2.40	296.00	710.40

NP - NOT PRINTED ON JOB RESULTS

BENCHMARK RESULTS

JOB NO.	N27	COMPANY	COGID
MACHINE	370/158-1	OPERATING SYSTEM	VS2 R 3.7
LANGUAGE	PL1 V1 R 3.0 PTF 65 ASSEMBLER	SORT	C A SORT

RESULTS

CPU TIMF JOB (SEC)	143.43	
I/O TIMF (SEC)		
DISK/TAPE ACCESSES (NO)	8852	
MEMORY USED		K M
CARDS READ	140	
LINES PRINTED	5792	
STEPS EXECUTED	4	
EXECUTION TIME (MINS)	23.18	

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIM
		DISK	TAPE	JOB	SYS	TOT		
1	SORT	16	419	1.90	1.24	3.14	152	477.28
2	ASSEMBLER	644	64	15.75	1.65	17.40	100	1740.00
3	GO	562	521	5.54	2.75	8.29	152	1260.08
4	PL1	4275	2351	97.90	16.70	114.60	200	22920.00
5	LKED							
6	GO							
7	PL1							
8	LKED							
9	GO							
TOTALS		5497	3355	121.09	22.34	143.43	-	26397.36

JOB CHARGES

ITEM	USAGE	T1		T2		T3	
		RATE	CHARGE	RATE	CHARGE	RATE	CHARGE
CPU TIME	143.43					.66	94.66
MEMORY	26397.36	.00283		.00220		.00157	41.44
I/O DISK	5497	.01355		.01141		.00998	54.86
I/O TAPE	3355					.00670	22.48
TOTALS:	-	-		-		-	213.44

NOT PRINTED ON JOB RESULTS

BENCHMARK RESULTS

JOB NO.	N27	COMPANY	GSI
MACHINE	370/155-1	OPERATING SYSTEM	HASP II
LANGUAGE	PL1 OPTIMISING VF 5.4 ASSEMBLER	SORT	SYNCSORT

RESULTS

CPU SEC JOB	118.15
I/O TIME (SEC)	NG
MEMORY USED FROM	90 K TO 250 K
DISK/TAPE ACCESSES	14,041
CARDS READ	64
LINES PRINTED	5546
STEPS EXECUTED	9
EXECUTION TIME (MINS)	18.81

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIME)
		DISK	TAPE	JOB	SYS	TOT		
1	SORT	42	11	1.54			150	
2	ASSEMBLER	610	65	13.06			90	
3	GO	554	522	4.01			150	
4	PL/1	7617	2352	86.34			100	
5	LKED	988	-	2.79			120	
6	GO	12	-	2.17			250	
7	PL/1	50	20	2.23			150	
8	LKED	148		1.20			150	
9	GO	530	520	4.81			150	
TOTALS		10551	3490	118.15				

JOB CHARGES

Q = 0.210 x

SECONDS = 758

NORMAL PRICE = .21 x 2900 = 609 FHT

EXPRESS PRICE= .21 x 3600 = 756 FHT

NG - NOT GIVEN (ie NOT PRINTED BY LOG)

BENCHMARK RESULTS

JOB NO.	N27	COMPANY	IBM
MACHINE	370/168-3	OPERATING SYSTEM	VS 2 R 3.7
LANGUAGE	PL/1 OPTIMISING ASSEMBLER V1-R3-PTF65	SORT	SM1 R 2.1

RESULTS

CPU TIME JOB (SEC)	15.27
I/O TIME (SEC)	107.28
DISK/TAPE ACCESSES (NO)	4317
MEMORY USED	332 K<M<388 K
CARDS READ	138
LINES PRINTED	3504
STEPS EXECUTED	4
EXECUTION TIME (MINS)	9.08

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIM
		DISK	TAPE	JOB	SYS	TOT		
1	SORT			.55	.17	.72	388	
2	ASSEMBLER			4.52	.32	4.84	384	
3	GO			2.12	.69	2.81	332	
4	PL1			8.08	2.36	10.44	384	
5	LKED			-	-	-	-	
6	GO			-	-	-	-	
7	PL1			-	-	-	-	
8	LKED			-	-	-	-	
9	GO			-	-	-	-	
TOTALS				15.27	3.54	18.81	-	

JOB CHARGES

ACTIVITY	RATE FHT/UC	UC	CHARGE FHT
PROCESSING	87.34	5.3951	471.23
TAPE MOUNTS	56.00	1.0000	56.00
CARDS READ	80.00	0.0386	3.09
LINES PRINTED	97.60	0.8057	78.66
TOTALS:	-	7.2394	608.98

NOT PRINTED ON JOB RESULTS

BENCHMARK RESULTS

JOB NO.	N27	COMPANY	SPI
MACHINE	3032	OPERATING SYSTEM	VS2 R 3
LANGUAGE	PL1 OPTIMISING ASSEMBLER	SORT	C A SORT

RESULTS

CPU TIME JOB (SEC)	31.24
I/O TIME (SEC)	NOT PRINTED
DISK/TAPE ACCESSES (NO)	9684
MEMORY USED	128 K< M <300 K
CARDS READ	33
LINES PRINTED	4060
STEPS EXECUTED	7
EXECUTION TIME (MINS)	11.73

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIME)
		DISK	TAPE	JOB	SYS	TOT		
1	SORT	92	-	0.61	0.12	0.73	128	
2	ASSEMBLER	231	-	2.26	0.17	2,43	300	
3	GO	1082	-	1.86	0.79	2.65	128	
4	PL/1	6322	-	19.24	5.06	24.30	128	
5	GO	719	-	3.70	1.32	5.02	140	
6	PL/1	21	-	0.81	0.15	0.96	128	
7	GO	1217	-	2.76	1.00	3.76	128	
8								
9								
TOTALS		9684	-	31.24	8.61	39.85	-	

JOB CHARGES

SERVICE	CHARGE FHT
*SAME DAY	336
2 HOUR	420
1 HOUR	504
10 MIN	672

ACTIVITY	*RATE FHT/UC	UC	*CHARGE
LINES PRINTED	1.28	38.57	49.37
CARDS READ	1.28	.33	.42
TAPES MOUNTED	1.28	20.00	25.60
PROCESSING	1.28	262.45	335.94
TOTALS:	-	321.35	411.33

NP - NOT PRINTED ON JOB RESULTS

JOB NO.	N27	COMPANY	TELSYS
MACHINE	AS6	OPERATING SYSTEM	OS VS1
LANGUAGE	PL1 ASSEMBLER	SORT	SM1 R3 PTF

RESULTS

CPU TIME JOB (SEC)	31.94
I/O TIME (SEC)	NP
DISK/TAPE ACCESSES (NO)	12,302
MEMORY USED	168 K < M < 512 K
CARDS READ	NP
LINES PRINTED	4430
STEPS EXECUTED	9
EXECUTION TIME (MINS)	38.61

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIME
		DISK	TAPE	JOB	SYS	TOT		
1	SORT			.40	NP	NP	188	
2	ASSEMBLE	8404	3898	3.97	"	"	512	
3	GO			1.10	"	"	166	
4	PL/1			19.55	"	"	294	
5	LKED			1.25	"	"	168	
6	GO			2.93	"	"	512	
7	PL/1			.67	"	"	294	
8	LKED			.74	"	"	168	
9	GO			1.33	"	"	512	
TOTALS		8404	3898	31.94	NP	NP	-	

JOB CHARGES

ACTIVITY	RATE FHT/UC	UC	CHARGE FHT
JOB SET UP	50	1	50.00
CPU SEC	3.50	31.94	112.00
I/O ACCESSES	.012	12302	147.62
LINES PRINTED	.004	4430	17.92
TOTALS:	-	-	322.34

NP - NOT PRINTED ON JOB RESULTS

BENCHMARK RESULTS

N28

BENCHMARK RESULTS

JOB NO.	N28	COMPANY	CISI
MACHINE	370/168-3	OPERATING SYSTEM	VS2 R 3.7
LANGUAGE	COBOL (ANS) CB 2 V 4 R 1.4	SORT	SM1 R 2.1

RESULTS

CPU TIME JOB (SEC)	31.88
I/O TIME (SEC)	417.33
DISK/TAPE ACCESSES (NO)	15,832
MEMORY USED	152 K < M < 188 K
CARDS READ	NP
LINES PRINTED	NP
STEPS EXECUTED	7
EXECUTION TIME (MINS)	

JOB DETAILS FOR IBM RUNS

STEP	ACTIVITY	I/O ACCESSES		CPU TIME (SEC)			VIRTUAL MEMORY (KB)	MEMORY RETENTION (KB X TIME)
		DISK	TAPE	JOB	SYS	TOT		
1	COBOL	47	113	1.58	.21	1.79	188	336.52
2	GO	1713	199	1.96	2.07	4.03	152	612.56
3	SORT	3362	-	4.59	2.03	6.62	156	1032.72
4	COBOL	47	195	1.80	0.24	2.04	188	383.52
5	GO	9821	-	18.11	6.69	24.80	156	3868.80
6	COBOL	60	245	2.44	0.29	2.73	188	513.24
7	GO	8	22	1.40	0.21	1.61	152	244.72
8								
9								
TOTALS		15058	774	31.88	11.74	43.62	-	6992.08

JOB CHARGES UNITS CHARGED : 230.77

SERVICE	RATE FHT/UC	UC	CHARGE FHT
EXPRESS	4.01	230.77	925.39
STANDARD	2.99	230.77	690.00
NIGHT	2.40	230.77	553.85

NP - NOT PRINTED ON JOB RESULTS

BENCHMARK RESULTS

TS/1

BENCHMARK RESULTS

JOB NO.	TS1	COMPANY	CDC
MACHINE		OPERATING SYSTEM	NOS
LANGUAGE	FTN (FORTRAN)	SORT	

RESULTS

COMPILATION	1.005	SBUS
EDIT	.375	"
RE-COMPILE	-	
RUN	2.821	
	4,201	
OTHER (OVERHEAD)	1.153	
TOTAL (SBUS)	5.354	SBUS
CONNECT TIME	41	MINS

REMARKS: TWO STATEMENTS ON SAME LINE AT LINE 380
RE-COMPILATION TIME AFTER EDIT; NEGLIGEABLE

JOB CHARGES

NB: CONNECT TIME CHARGE IS 81.7% OF TOTAL COST FOR JOB.

ITEM	RATE FHT/UC	UNITS CHARGED	CHARGE FHT
CONNECT TIME @ 30 cps	80	0.68 hr	54.66
COMPILATION	2.292	1.005	2.30
EDIT	2.292	.375	0.86
RE-COMPILE	2.292	NEG	-
RUN	2.292	2.821	6.46
OTHER	2.292	1.152	2.64
TOTALS:	-		66.92

BENCHMARK RESULTS

TS/2

BENCHMARK RESULTS

JOB NO.	TS/2	COMPANY	CSS FRANCE
MACHINE	NOT KNOWN	OPERATING SYSTEM	
LANGUAGE	FORTRAN G, FORTRAN H, WHATFIV	SORT	

RESULTS

o COMPILATION TIME		
	G FORTRAN	5.50 ARU'S
	H FORTRAN	13.50 ARU'S
o EXECUTION TIME		
	G FORTRAN	4.20 ARU'S
	H FORTRAN	4.16 ARU'S
o COMPILATION & EXECUTION		
	WHAT FIV	6.00 ARU'S
o TO CREAK CORE IMAGE		3.00 ARU'S
o TO EXECUTE FROM CORE IMAGE		1.57 ARU'S

JOB CHARGES

1. RATE PER ARU = 1.5 FHT EXCLUDING CONNECT TIME
2. CONNECT TIME @ 33 cps = 75 FHT PER HOUR
3. CONNECT TIME @ 15 cps = 55 FHT PER HOUR

CPU COSTS TO COMPILE & RUN:-

1. FORTRAN IVG: 1.5 x 9.7 = 14.55 FHT
2. FORTRAN H : 1.5 x 17.66 = 26.49 FHT
3. WHATFIV : 1.5 x 6.00 = 9.00 FHT

IV VENDOR ANALYSIS

IV VENDOR ANALYSIS

A. ALLIANCE INFORMATIQUE

A. ALLIANCE INFORMATIQUE

ALLIANCE INFORMATIQUE
Tour Neptune
92086 PARIS LA DEFENSE

Tel : 776-43-13

President Mr Hugoo
Director General Mr Rouet
*Account Manager J. Mourge
*Technical Manager A. Rouelle
* Main Input Contacts

---

1. BACKGROUND

- In 1973, SCICON, a subsidiary of British Petroleum, bought SETM and in 1976 BPS's French group SFBP, decided to create an informatics department in the form of Alliance Informatique. BP then decided to take a shareholding of just under 50% in GFI (Le Groupement Francais d'Informatique) and Alliance became a subsidiary of that company. The other major shareholders in GFI are Banque Francaise and Schlumberger.

- In 1978, Alliance Informatique had a sales turnover of some 75MF.

2. ORGANISATION & STAFF

- For the GFI group as a whole, the staff is approximately 600. Alliance has just over half of all staff in the group (310) and of these, 100 are technical people.

- The organisation chart is shown as Exhibit A.

- The greatest strength of the organisation lies in the department for mini-computers. The company is not just a service bureau. It has a substantial systems consultancy and development capacity which is only partially concerned with the mainframe bureau services.

3. HARDWARE

- The mainframes at Alliance's offices comprise an IBM 370/158 bi-processor and an IBM 370/155. Located in another building is another 370/158 for back-up purposes.

- There are two RJE terminals connected locally in the building.

- The tape drives and printers are controlled independently of the main console under two special software enhancements privided by Alliance. The tape usage and printing load is exceptionally high.

- For security, Alliance participates with other industrial companies in another computer complex consisting of a 4 Mb IBM 370/168 and a 2 Mb IBM 370/148.

- The 370/158 bi-processor configuration is shown as Annexe-B.

4. NETWORK AND TERMINALS

- Alliance's IBM 370/155 is used mainly for interactive services and there are some 300 terminals in the field which access it. The RJE terminals (about 15) are normally connected to the IBM 370/158 bi-processor.

- Back-up to the network involves a switchover to the auxiliary 370/158. Should this requirement arise, on practice about 1 hour is needed to transfer disc & tape files. This has occurred only once in the last 3 years.

- Most of the main regional towns have either interactive or RJE access to the Alliance computer centre.

- The RJE terminals range from the IBM 2780 simple hardwired terminal to an IBM 370/125 small mainframe.

5. SERVICES

- The majority of machine usage is taken up, running standard accounting packages. The major real-time application is for Renault and concerns spare parts inventory control.

- Key package products are:
  - o Accounting
  - o Assets Management
  - o Invoicing
  - o Payroll

- The people contacted appeared to know little about financial modelling packages however they did identify a package ("FAST") developed by BP for this purpose.

- The professional services staff undertake a good deal of customised applications development, both for the minicomputer division and for external clients.

- The minicomputer division operates on a turnkey basis and the minicomputer models involved are:

  CII - Honeywell Bull
  DEC
  HP
  IBM
  INFOREX

INTERTECHNIQUE
OLIVETTI

- Service Availability

Systems availability is 24 hours a day, Sundays included. The records of service reliability were examined by INPUT and it was apparent that the major losses of system availability over the last two years were caused by (i) electrical power failure and (ii) strikes (mostly by electrical power workers).

6. MARKETING

- BP is a very large captive customer. Alliance did not disclose just how large a customer they are, but it would appear that BP is providing as much as 40% of Alliance's business. Alliance therefore needs to broaden its customer base, beyond its current size of 400 customers. The company has been developing strongly the minicomputer operation, which it sees as complementary to its bureau activities. An interactive accounting package is now available for the minicomputers, an obvious step towards entering the developing market for user site hardware services.

- Alliance's Market strategy is to concentrate on commercial data processing applications, on the provision of computer time on a batch or RJE basis, and on the provision of special real-time applications. The objective is to maintain 5th or 6th position in the league of computer service bureaux in France.

- The commercial sectors that Alliance believes are of key importance are:

    - Banking & Finance
    - Petroleum
    - Shipping

- o Mechanical Industry
- o Food Distribution
- o Public Works
- o Training

7. OVERALL IMPRESSION

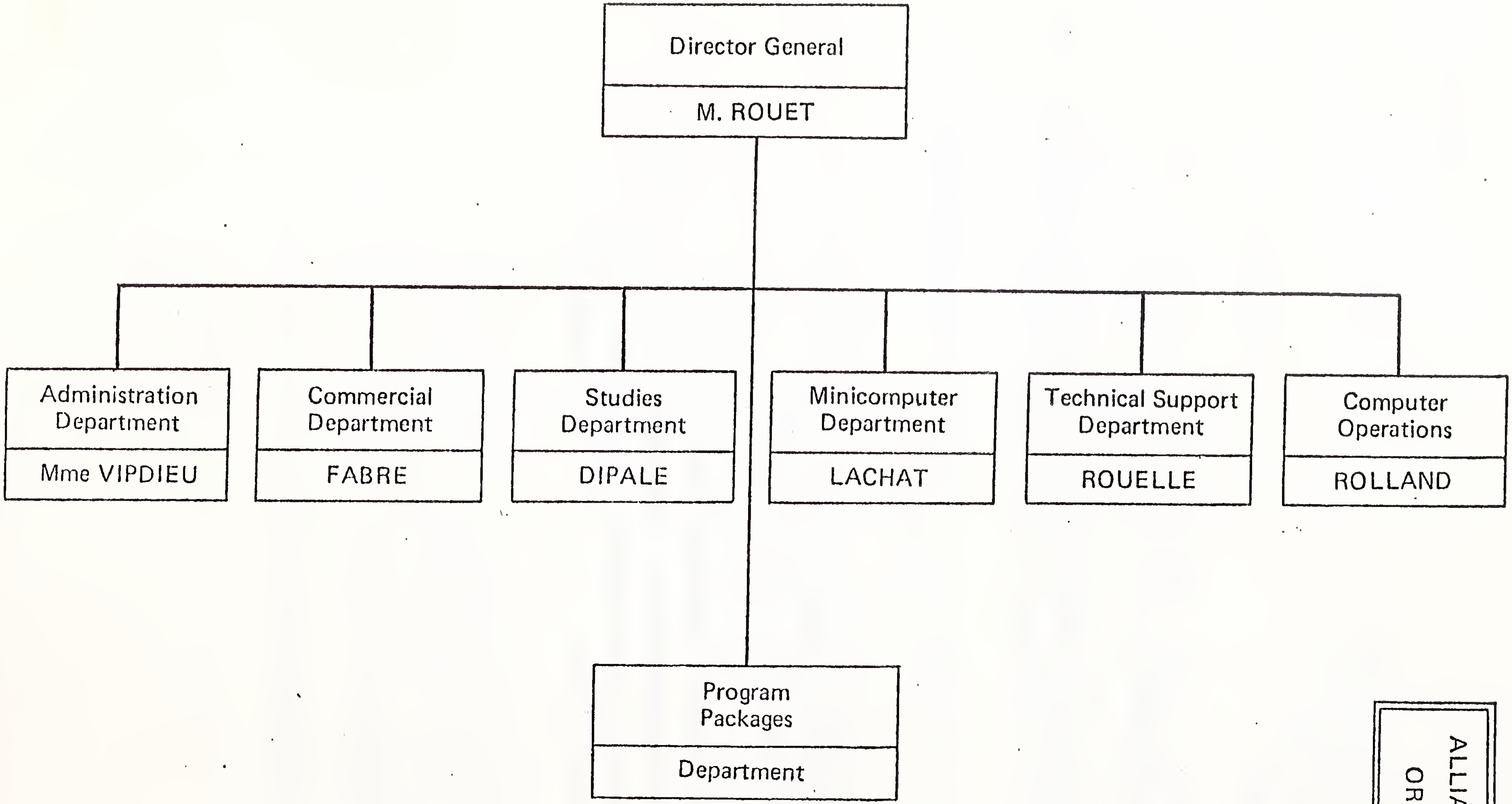
- Alliance Informatique present an open and very friendly organisation. The people are of very good quality and the facilities offered are excellent.

- The computer and network control rooms are business like and well laid out although there is not all that much spare room.

- The tape and printer management systems were impressive and unlike anything else seen during the study, except at FRANLAB.

- Alliance has a very strong financial base in the form of its parent BP, from whom it derives large revenues. This could suggest an easy going concern, however there is no doubt that Alliance is business like and keen to sell its services which are broader in scope than many computer bureaux.

ALLIANCE IN FORMATIQUE ORGANISATION CHART



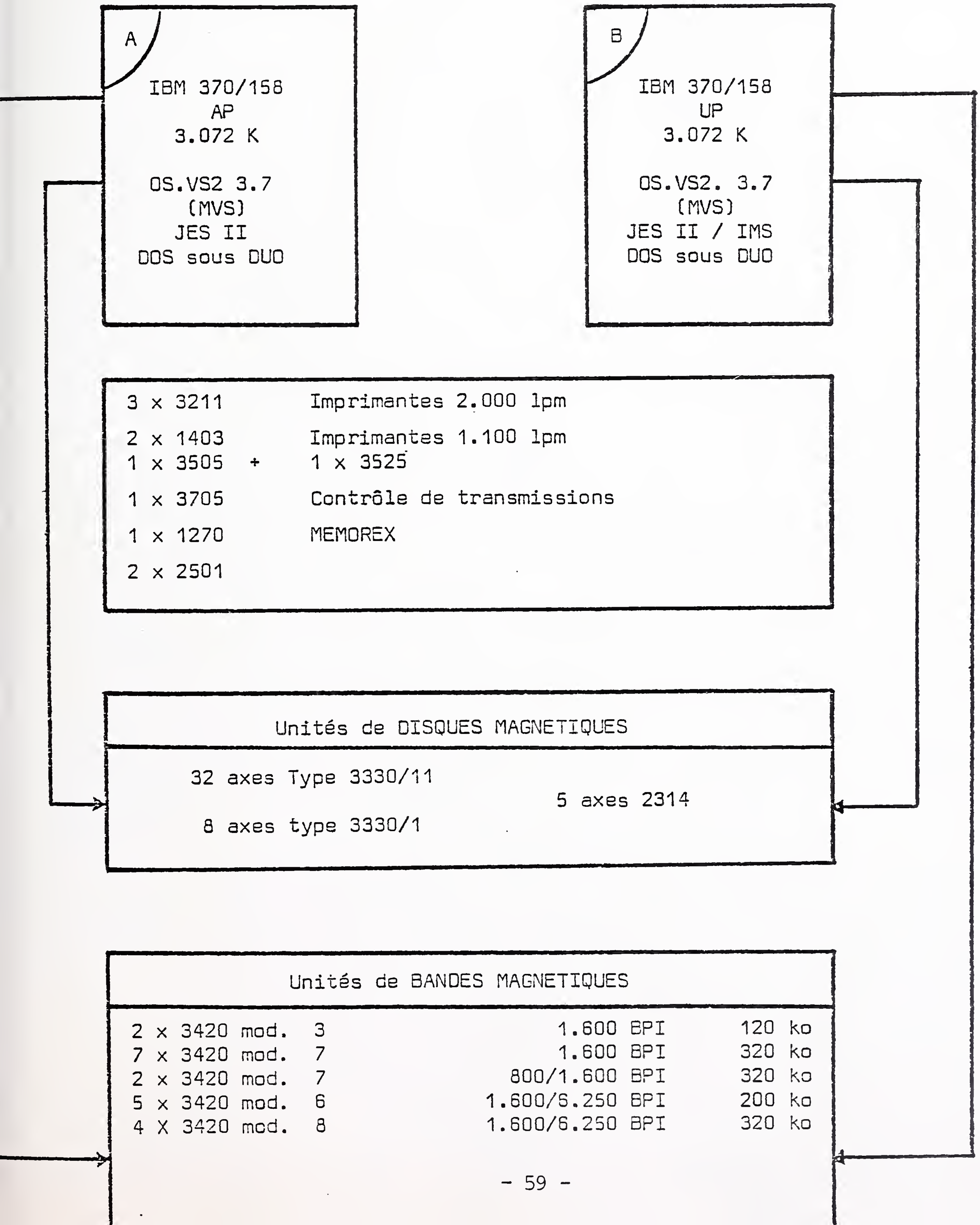
Staffing:		
	Technical	100
	Other	210
	TOTAL	310

Staffing for GFI Group = 600

ANNEXE - ALLIANCE/B

ALLIANCE
INFORMATIQUE

CENTRE ORDINATEURS
TOUR NEPTUNE
CONFIGURATION AU 1.01.1979



A
IBM 370/158
AP
3.072 K

OS.VS2 3.7
(MVS)
JES II
DOS sous DUO

B
IBM 370/158
UP
3.072 K

OS.VS2. 3.7
(MVS)
JES II / IMS
DOS sous DUO

3 x 3211	Imprimantes 2.000 lpm
2 x 1403	Imprimantes 1.100 lpm
1 x 3505 +	1 x 3525
1 x 3705	Contrôle de transmissions
1 x 1270	MEMOREX
2 x 2501	

Unités de DISQUES MAGNETIQUES

32 axes Type 3330/11
8 axes type 3330/1
5 axes 2314

Unités de BANDES MAGNETIQUES

2 x 3420 mod.	3	1.600 BPI	120 ko
7 x 3420 mod.	7	1.600 BPI	320 ko
2 x 3420 mod.	7	800/1.600 BPI	320 ko
5 x 3420 mod.	6	1.600/6.250 BPI	200 ko
4 X 3420 mod.	8	1.600/6.250 BPI	320 ko

B. ARTEMIS S.A.

B. ARTEMIS S.A.

ARTEMIS S.A.
4 Place Radul - Dartry
75015 Paris

Tel: 538-52-53

Director General: C. Brisseau
Director: R. Aurignac
Finance Director: R. Darmont

* Account Representative: C. Lapeyre

* Principal Input Contact.

---

1. BACKGROUND

- Artemis is part of the G/CAM group of companies (which has a 50% shareholding). The remaining shares are held 35% by FRANLAB, 10% by SEDES and 5% by Armines. G/CAM itself had a turnover in 1977 of approximately 45 MF derived from:-
  - o 3 computer centres (Angers, Bordeaux and Sorcelles)
  - o a professional services division in Paris
  - o a subsidiary SCOD, specialising in the turnkey mini-computer systems
  - o a micropraphics centre in Paris
  - o An Artemis computer bureau specialising in energy based information systems.
- There are 8 partners in G/CAM repesenting principally research, banking, building societies and tourism interests.

2. ORGANISATION & STAFFING

- The G/CAM group encompasses approximately 800 staff overall including associates but only 200 are directly controlled. Artemis has a very small staff of only 35 persons of whom 10 are located at the Paris office and provide technical and sales support. The remaining 25 staff are based at Fontainbleau and are responsible for running the computer centre.

3. HARDWARE

- The G/CAM group mainframe hardware is as follows

Paris Area:

- Sarcelles	1 x IBM 570/135 1 x IBM 370/138
- Fontainbleau	1 x IBM 370/158-3

Provinces

- Angers	1 x IBM 370/135
- Bordeaux	1 x IBM 370/135

- The Bordeaux centre has plans for a CII-HB computer. From the above it can be seen immediately that the preference is for medium sized IBM mainframes with Artemis having much the largest mainframe in the group.

- The Artemis Fontainbleau centre has (by other bureau standards) a relatively small on line disc capacity (6 x 30 MB EDS drives, 8 x 100 MB EDS drives and 2 x 317 MB EDS drives). Two more 3350 EDS drives are to be installed in July 1979, and there are 7 x 9 track tape drives, a card reader (100 c.p.m.) and a card punch (120 C.P.M.) There is one fast on-line printer at Fontainbleau (and a variety of printing capabilities available on an RJE basis, see below).

4. NETWORK AND TERMINALS

- The network configuration given, shows 5 RJE terminals using 4800 and 9600 BPS lines and 5 more RJE terminals using the CADUCEE network. Of these there are 2 RJE terminals using a dial-up line and one using a 2-wire leased line. This overall total is 14 RJE terminals, of which form are located in Paris.

- Slow speed keyboard/typewriters are installed in 8 locations, two of which are in Fontainbleau. There are two (2 wire) leased lines involved and the rest are connected on a dial-up basis.

- The terminals used are the following:

IBM-CMC 72, IBM 3780, IBM 2741, IBM 3741/2
DATA 100/74, DATA 100/76, DATA 100/78, DATA 100/88/6
ORDO PROCESSEUR 400
GTE 7800
MDS 2400

- Of the 22 terminals used 9 are supplied by IBM.

5. SERVICES

- Artemis had an early association in 1968 with l'Ecole des Mines (Fontainbleau). The company ARMINES (which specialises in industrial mining research and is a shareholder) has connections with the l'Ecole des Mines school. Both organisations use computers substantially, and ARMINES software for mining information systems has been built up over a number of years.

- Time sharing services are based on ROSCOE developed by ADR in the USA and marketed by CAP in France. ROSCOE has a reputation for being more cost effective than CALL for time sharing on IBM mainframes. The database management system, SIGMI, was developed by ARMINES.

- The libraries available on the ARTEMIS processor include software developed by SEDES in the area of general accounting, analytical budgeting and investment planning.

- The association with FRANLAB permits Artemis to implement FRANLAB CDC applications in the scientific field on its own machine and the particular specialties singled out were:

    - OCR data conversion (using the TRANSAC T300 reader)
    - Electrocardiogram analysis
    - Project Planning & control (PMS IV)
    - Structural Analysis (STRUDL)
    - Linear Programming (MPS)
    - Statistical Analysis (PVS)
    - Matrix Methods (RAS)

- Various software aids are also available such as report-writers (PERSEE) and data management.

- Financial Planning and analysis are not offered.

Service Availability

- 24-hour service, Monday excepted.

- Monday shut down for Maintenance 9am-12 noon.

- Sunday normally closed, but open by arrangement

- Saturday closing time 17.00 P.M.

6. MARKETING

- Artemis does most of its marketing through its associates. Its prime objective seems to be to supply machine services to them. However it does have one or two specialities of its own, notably cardionics and a high level report writer for information extraction and presentation.

7. OVERALL IMPRESSIONS

- It is clear that there are more cost-effective machines available for handling several of the key applications featured in ARTEMIS library.

- The IBM 370/158 can not compete with the main word-based machines for scientific applications, yet this seems to be the mainstream of Artemis' work and that of the associates who use the centre.

- With only one sizeable mainframe computer suited for commercial data processing, ARTEMIS could not be considered a serious threat to any of the major bureaux. Also the other machines in the Group are mostly obsolete IBM 370 medium size mainframs (e.g. 370/135) and have little in common with the affairs of ARTEMIS. ARTEMIS' main strength (if it can be called an ARTEMIS strength) is the special applications skills of its associates and their continued support of one of the G/CAM group's larger installations.

- ARTEMIS' is in the dangerous middle ground of being neither very large and secure nor small enough to be really flexible. Also its equipment is not particularly cost effective for the work done on it by its associates.

C. COGID DEPARTMENT GESTION

C. COGID DEPARTMENT GESTION

COGID DEPARTMENT GESTION
76, Avenue Kleber
75116 Paris

Tel: 505-13-13

SENIOR EXECUTIVES

President M. Marcel Bouchet
Director General M. Paul Haegel
Director General Mr Louis Demerciere
*General Manager C. Gerbaud
*Sales Manager M. Mason
*Manager Systems Programming D. Ferard

* CONTACTS WITH INPUT

---

1. BACKGROUND

- Cogid was formed in 1969 out of the systems and computer departments of the Banque Sofinco, which itself is a subsidiary of the Compagnie Financiere de Suez et de l'Indochine. It is run as a division of Sofinco and has a board of directors who are directors of Sofinco but not executive directors of COGID. The General Manager of COGID, Mr. Christian Gerbaud, is in effect its Managing Director.

2. ORGANISATION & STAFF

- The total staff strength is approximately 200 of which about 120 are technical staff and 80 are computer operations personnel. The Systems Department has a special section devoted to the support of work for Sofinco who are a major customer of the bureau.

3. HARDWARE

- Central hardware consists of two IBM 370/158's. One is a 3 Mb monoprocessor and the other is a 6 Mb bi-processor. The chief characteristic however is the very large fixed disc on-line storage which is approximately 18000 Mb. Cogid also has two Burroughs B800 processors undertaking specialised banking work.

- The computer room is split into two levels. The processor and fixed disc are on one floor and all other peripherals are on another above it. Thus there is very little activity around the disc's and processor, but upstairs in the I/O room, the area is very congested: the two B800's are installed alongside the four printers, tape drives and 3705 communications area.

4. NETWORK AND TERMINALS

- The network has seven main lines with branch points at Lille, Reims, Strasbourg, Nantes, Lyon, Bordeaux and Marseille. Access to these branch points is on a multi-drop basis from 47 towns in France. More than 200 terminals of interactive and remote batch IBM compatible varieties connect to the network on either dial-up or leased circuits or the CADUCEE network. This gives a data transmission speed of up to 9600 BPS in synchronous mode (BSC) and low speed facilities on an asynchonous basis.

5 SERVICES

- With the very large fixed disc capacity, there is an emphasis on large databases with IMS and MARK IV software in use. Cogid were rather vague about what applications were using such a large database.

- Packages from the IBM library that are higlighted are : STRUDL (structural and finite element analysis), SYSPLAN (critical path project planning), and PERSEE (enquiry and information retrieval). However, COGID is a classic commercial data processing bureau, and the engineering/scientific packages are out of place in their library. Cogid claim to have a very large personnel database on-line and provide significant payroll applications services.

6. MARKETING

- COGID's a classic commercial data processing bureau with a strong banking customer (SOFINCO) who also directs the bureau division's activities. Commercial policy is dominated by banking. It is not clear what percentage of the facilities were taken up with work by Sofinco, but it appears to be approximately 40%. Within the systems development function there is a dedicated department for the development and maintenance of Sofinco's applications.

7. OVERALL IMPRESSIONS

- The general manager of COGID was unimpressive and one gained a feeling that he was operating under tight constraints from Sofinco. The sales manager Mr Mason was helpful but not very well informed about client activities (!) and the systems programming manager was clearly very overworked mainly by trouble shooting. He appeared to have only one other person supporting him which is inadequate for the hardware base installed.

- There were good ancillary facilities for handling computer output, including automatic envelope "stuffing" machinery.

- Office space was very congested, very little standard sales or tehcnical documentation was in evidence and the overall impression was of enthusiastic amateurs at work.

D. CONTROL DATA - CYBERNET SERVICES

D. CONTROL DATA - CYBERNET SERVICES

CONTROL DATA - CYBERNET SERVICES
Tour Gamma A.
195, Rue de Bercy
75582 Paris

Tel: 345-50-45

Data Services Manager: J.P. Lange
Manager, Tech. Support: H. Gaillard-Groleas
Manager, Admin/Operations: P. Ceugniet
Manager, Sales : J.P. Lange

---

1. BACKGROUND

- Cybernet services began in 1965. They are operated as a division of Control Data France and bureau services are now interconnected across Europe by networks.

2. ORGANISATION AND STAFF

- The organisation chart shown as Annexe-A indicates a line reporting relationship between J.P. Lange, who is responsible for CD's data services in France and J. Carnesecca, the country manager for CDC France. Matrix management is practised, which means that Lange also reports to D. Speidel who is functionally responsible for European Data Services. The French operation has 150 staff, more than half of which are technical.

3. HARDWARE

- The hardware arrangements differ significantly from the CDC hardware used by CISI and FRANLAB. There are eight processing centres across Europe and a Cyber 175 is planned for the UK in about 1980. The chart on the next page shows the position in the Western European area:

	Computer Centre	RJE	Local Tel. CDC Access
Austria (Vienna)	-	1	1
Belgium (Brussels)	1	1	1
Denmark (Copenhagen)	-	1	1
France	1	1	1
Finland	-	1	-
Germany	1	10	6
Greece (Athens)	1	-	-
Israel	1	1	-
Netherlands	1	1	1
Norway	-	2	1
Sweden	1	6	2
Switzerland	-	1	1
United Kingdom	1	4	3
	8	30	18

- Outside this area, there are six mainframe centres in the USA, two in Australia and one each in Mexico, Brazil and Canada.

- Hardware rationalisation is taking place in 1979 and plans exist to standardise on the Cyber 175 as the following table shows:

Location	Hardware	Comments
Paris (Rungis)	Cyber 74	175 by end 1979
Frankfurt	Cyber 175	
Stockholm	Cyber 175	July 1979
The Hague (Rijswick)	Cyber 175	Dec. 1979
Brussels	Cyber 174 & 175	2 x 175 from Dec. 1

4. NETWORK AND TERMINALS

- The networks of the USA and Europe are interconnected by Satellite link which terminates in Europe in the Hague. The profile in Section 2 shows the relative strength of CDC in the European countries with Germany, Sweden and the UK being the best served countries.

- The network in Europe is interconnected with six processing centres in the USA by means of a Satellite link and the network in all the European countries put together. In the USA there are 44 RJE centres and 110 towns with local telephone access to interactive services. There are also network facilities in Brazil and Canada, but no links outside these countries. Australia has a link to Wellington New Zealand where there is an RJE centre.

5. SERVICES

- The Brussels centre is the nearest location to France for large scale batch processing with its cyber 174 and 175 machines. The Cyber 174 runs under scope 3.4 and the Cyber 175 provides the NOS based interactive service primarily to the UK, Italy and Belgium. When the Cyber 175 is installed at Rungis in June this year, interactive services in France will link to Rungis instead of to Brussels.

- The Applications listed in the brochure are classified as follows and in the following order:

  - o Structures
  - o Civil Engineering
  - o Pipe Stress Analysis
  - o Energy
  - o Electrical/Electronics
  - o Planimetry and Plotting

- o Operations Research & Mathematics
- o Statistics and Time Senes
- o Vehicle Routing
- o Database Management
- o Management & Financial Planning
- o Banking & Stock Market Applications
- o Accounting

- The order of these applications is probably indicative of their importance in commercial terms.

- Service Availability

Normally 5½ day week to noon Saturday and 10 p.m. most nights. Sunday working is not usual but can be arranged by special request. There is an overnight service for RJE customers.

6. MARKETING

- The marketing strategy is to provide on one operating system (NOS) both batch and interactive services based on the CYBER 175. Though perhaps only half as powerful as the CDC 7600, the Cyber 175 NOS operating system is the future base on which CDC plans to evolve its Applications development. Thus Scope is being phased out as far as bureau services are concerned and this affects the availability in future of up-to-date CDC developed applications on the CDC 7600 machines.

- The main marketing thrusts for CDC data services are:

  - o Database (System 2000)
  - o Structural Analysis and Engineering
  - o Financial Planning IF PS

- The emphasis of CDC on the NOS operating system for the Cyber 175 for both batch and interactive working is highly significant for Scope operating system users. CISI and FRANLAB will no doubt watch these developments of CDC software policy most carefully.

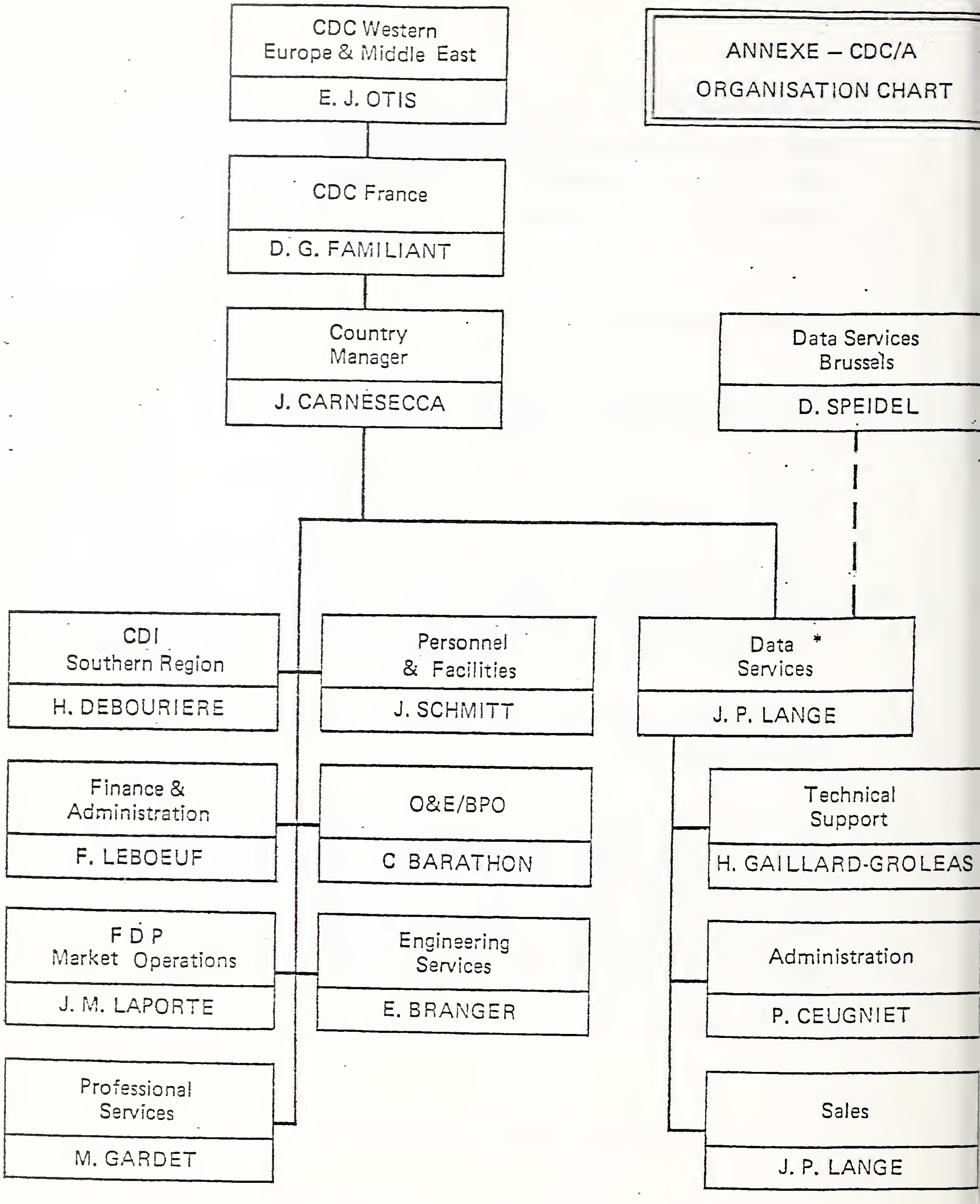
7. OVERALL IMPRESSIONS

- The RJE centre at Paris was the first location visited. As a retail operation, it is attractive and businesslike. Mr. P. Lefebvre moved very swiftly to arrange a visit to Rungis when it was realised that magnetic tapes were involved. On arrival at Rungis, the technical support assistant dealt efficiently with the JCL conversion and Fortran runs, whilst the larger of the two time sharing programs on paper tape was entered. It had to be corrected because two statements appeared on the same line after the tape had been read. The time sharing application was then run without further incident.

- Documentation on the Time Sharing service was studied and seemed adequate though not excellent.

- The overall impression gained was that though small as yet in France, CDC will expand quite quickly since they appear to have good quality businesslike staff and management and because CDC equipment in Batch and Time Sharing mode is more cost effective than IBM equipment for scientific work. In Batch mode, it is of course also easier to use because of the much simpler approach to JCL.

ANNEXE – CDC/A ORGANISATION CHART



22-2-79.

*Staffing: Total of 150

E. CSS FRANCE

E. CSS FRANCE

CSS FRANCE
30, Rue Notre Dame des Victoires
75002 Paris

Tel: 201-56-35

Managing Director: Y. Peresse

Technical Manager: J.M. De Heredia

---

1. BACKGROUND

- National CSS Inc. of America needs no introduction, being one of the larger IBM orientated on-line service bureaux. The French operation is owned 40% by National CSS and 60% by Banque Rivaud. NCSS and 60% operation started 3 years ago.

2. ORGANISATION & PERSONNEL

- NCSS employs approximately 1250 persons throughout the group. In Europe, it employs 30 to 40 people in England (London and Manchester) and 15 in France. The French organisation is so small, that an organisation chart would be superfluous.

3. HARDWARE

- Mainframe hardware is situated in five processing centres in Los Angeles, Sunnyvale, New York City and Stamford.

- The mainframe hardware used consists of two 370/168's, one 370/158, one Amdahl 470 V/6 and one 360/67.

- The IBM and Amdahl mainframe computers are front ended by 26 PDP11/40 minicomputers located in the five processing sites in America.

- The mainframes use a specialised operating system VP/CSS. This is a conversational operating system which is they say "largely compatible with IBM's OS/360".

4. NETWORK AND TERMINALS

- NCSS's offices are linked by over 70,000 miles of network with local dialling facilities from over 80 locations. Its branch offices are located in 25 towns in the USA, but outside the USA, it operates only two branch offices (Paris and London).

- The mainframes can support 750 users simultaneously; most well known terminals can be connected to the network.

- In France, 85 to 90% of the revenue is generated from customers located in Paris. CSS France claim to have about 100 customers on the network.

5. SERVICES

- Since the mainframe computers are all in the USA, there are no ordinary batch processing off-line services in the UK or France. The services are interactive and remote batch.

- The principal limitation of the CSS system is its limited input/output capability. For example magnetic tapes cannot be processed outside the USA. Customers' tapes are flown to New York and back on a 48 hour turnaround basis.

- The program library contains a range of languages, utilities and database management software (see Annexe-A) for use by those wishing to primarily use the system for program development. In addition, there are 33 packages which can be classified as shown in Annexe-A.

- There does not appear to be much in NCSS's library of Applications packages that is very unusual. It is well known that "package poaching" is easy and common among time-sharing operators, so the most frequently used packages are to be found on most systems. Statistical routines are a particular case in point. Also, some packages owe their origins to IBM's SHARE library. The Biomedical statistical programs and the IBM Scientific subroutines seem to be almost a must for time sharing operators.

- What is unusual is the lens design package. Although lens design involves optimisation techniques and requires very high computer power, one would expect to see this available on CDC 7600's rather than on machines of the more limited power available through NCSS.

- Two packages, EMS and INFOTAB, are marketed for financial planning. EMS is a modelling language primarily whereas INFOTAB is for preparing more standard budget/financial reports and consolidations.

- The most important service available is without doubt NCSS's NOMAD product which is a combined database management and report writing system. The product is good, has some respected disciples (e.g. D.D. McCracken), and the program system development service ought to be marketable. The RAMIS and MARK II packages are obsolete now although still available and supported.

Service Availability

- Services are available 23 hours a day. In France, the service is available Mondays to Saturdays and most Sundays from 8 a.m. to 7 a.m. next day. Normal working occurs on public holidays to 6 p.m. (New York Time).

6. MARKETING

- NCSS has not made a great impact in the UK or in France to date. The impression is that potential customers with IBM technical expertise would be opposed to developing systems using facilities that create compatibility problems with IBM hardware and software.

- Of considerable interest is NCSS's contract with Philips to design a mainframe computer of approximately 370/138 power with the specific aim to sell mainframes with software that is fully compatible with the NCSS service bureau. This indicates clearly that NCSS's prime market strategy is to sell on-line commercial applications development.

- It is NCSS's policy to develop its own products. Business Week ranked NCSS recently as 8th in the league of public companies in terms of R & D expenditure per employee.

7. OVERALL IMPRESSIONS

- NCSS appears to be concentrating its marketing effort on "do-it-yourself" commercial systems development using a time sharing system. This is unusual and in the UK and France market penetration appears to be low. All documentation seen or given was written in English not French.

- Potential European customers may be reluctant to entrust commercial databases to computers outside Europe and to an organisation whose software tends to "lock in" the customer. For the conventional scientific time sharing user, being "locked-in" is never a serious threat since applications are rarely difficult to convert to another machine. Also the risks of damaging a small scientific database may be the same, but the consequences are nothing like as serious as for a commercial User, who could lose control of his financial accounts (which would be disastrous).

- The staff at NCSS France appear to be inexperienced by comparison with those found in most other organisations visited.

- The NCSS mainframe venture might be successful in the USA, but NCSS does not have an organisational base in Europe strong enough to sell mainframe computers successfully. It is difficult to see their present marketing policy being very successful outside the USA.

PROGRAM LIBRARY

Languages & Utilities

APL, BASIC, COBOL, FORTRAN, PLI, ASSEMBLER
Language dialect conversion
Terminal Graphics

Information Management

NOMAD, MARK IV, RAMIS & RAMIS II

Business Control & Planning

Financial Planning (5 Packages)
Market Research (4 Packages)
Forecasting (1 Package for time series analysis)
Statistical Analysis (4 Packages)
Simulation (5 Packages)
Accounting (1 Package)

Engineering

Electronic (6 Packages)
Maintenance (1 Package)
Fluid Dynamics (4 Packages)
Mechanical (1 Package)
Optics (1 Package)

Special Databases

Census of Housing and Population
Stocks, Bonds and Options traded
Marill Lynch Economics
ZIP Market Base

F. FRANLAB INFORMATIQUE

F. FRANLAB INFORMATIQUE

FRANLAB INFORMATIQUE
232 av. Napoleon Bonaparte
92500 Rueil Malmaison

Tel: 977-02-73

President : M. Allegre
Director of Computer Ops: G. Frachon
Director of Applications : M. Lanchon
Finance Director : G. Forrestie
Sales Director : V. Amara
* Overseas Manager : P. Butery

* Principal Input Contact

---

1. BACKGROUND

- FRANLAB was originally founded as Francolab but in 1963 it was bought by a consortium (see below)and renamed Franlab Informatique:

ISIS	65%
SG2	20%
Societe National Elf Aquitaine	15%

- IFP also has a holding, administered through ISIS (in which IFP has 82.2% control). The other ISIS shareholders are BNP (6.9%), Credit Lyonnais 6.4% and Societe Generale (4.5%).

- There are two FRANLAB companies:

  - Franlab Informatique (65% controlled by ISIS)
  - Franlab Consultant (100% controlled by ISIS)

  This report is concerned with Franlab Informatique only.

- In 1977 sales turnover was 50 MF and Franlab has offices in Paris, Lyon, Nantes, Nice and Germany. It has formed a new subsidiary AF Marine in the UK in association with W.S. Atkins & Partners.

2. ORGANISATION AND STAFF

- The organisation is presently very fluid since key changes are taking place. The best illustration that could be given is shown as Annexe A. There is a staff of 141 persons, including over 60 computer applications engineers.

3. HARDWARE

- The central processor at Rueil Malmaison is a CDC 7600 mainframe, front-ended by a Cyber 72 and Cyber 171.

- The CDC 7600 main processor is a 60-bit word machine and comprises 9 parallel units with a basic instruction cycle time of 27.5 namoseconds (NS). It has two memories. The SCM has a 275ns cycle time and a capacity of 65,536 words whereas the LCM has a 1760 cycle time and a capacity of 512,000 words.

- The Cyber 171 and 72 both are 60-bit word machines. The memory sizes are 131,072 words for the Cyber 171 and 98,304 words for the Cyber 72. The Cyber 171 has a cycle time of 400ns whereas the Cyber 72 has only a 1000ns basic cycle time.

- A feature of CDC machines is their use of multiple peripheral processing units (ppu) for I/O control. The 7600 has 6 ppu's with 4 high speed channels which operate at 36 million characters per second (mcs). The Cyber 171 has 10 ppu's and 12 I/O channels operating at a speed of 4mcs and the Cyber 72 has 14 ppu's with 24 I/O channels operating at 2 mcs.

- The disk drives are as follows:

	No. Spindles	Capacity (Mc)	Average Access (Ms)
CDC 76000	4	400	50
Cyber 171	10	200	30
Cyber 72	4	100	30

- In addition, the Cyber 72 controls the magnetic tapes and slow speed peripherals.

- There are 10 magnetic tape drives (two are 7 track) operating at densities up to 1600 bp; there are also two card readers, one card punch and three 2000 lpm printers. In addition, there is a large plotter, installed for scale drawings.

4. NETWORK AND TERMINALS

- The central complex provides 132 synchronous ports (1200 to 9600 BPS) and 60 asynchronous ports (110 to 2400 BPS). Both the Cyber 171 and the Cyber 72 support the network.

- With both slow speed interactive and fast remote batch terminals with network access to the central complex and a data link to AF Marine in the UK, Franlab has an ideal facility for engineers scientists and research workers needing very fast processing and the extra flexibility of a word based machine for scientific work, available remotely on a fast turnaround basis.

- The RJE terminals can read cards at 150 to 600 cards per minute and print at speeds from 60 to 600 lines per minute. There are also some remote plotters installed by clients.

5. SERVICES

- Franlab has grown from consultancies expertise in petroleum and marine engineering. In these areas there is considerable scope for the use of large computers to solve complex mathmatical and mathematical modelling problems. Franlab is not in the business of providing commercial data processing services, thus there is not a variety of payroll and accounting packages in its library.

- Its principal services are:

  o specialist computing and engineering applications expertise in the problem areas found in petrochemical and marine offshore activities.

  o management consultancy and applications assistance in problems of financial planning, project control, investment decision analysis, sales forecasting and personnel planning.

  o raw computer time in batch, remote batch and interactive modes.

Service Availability

- Monday to Saturday 9 a.m. to 2 a.m.
  Sundays - usually not, but by arrangement.

6. MARKETING

- The market emphasis is shown clearly by the number of programs in each classified section shown in Annexe-B which is an analysis of the program library. Particular strengths emerge in:

  - Mechanical Applications
  - Marine Hydrodynamics
  - Decision Assistance

- Data Analysis
- Forecasting and Management Information.

- Marketing is aimed at the specialist sectors of the market able to use very high power facilities. Clearly the government meteorology and research establishments, the chemical and oil industries and construction contractors/consultants are all key market for FRANLAB services.

- The turnover per employee was 357 KF per head in 1977, a high value in the sample of companies interviewed. This is due to (i) the strong scientific application orientation and (ii) the very high machine power available.

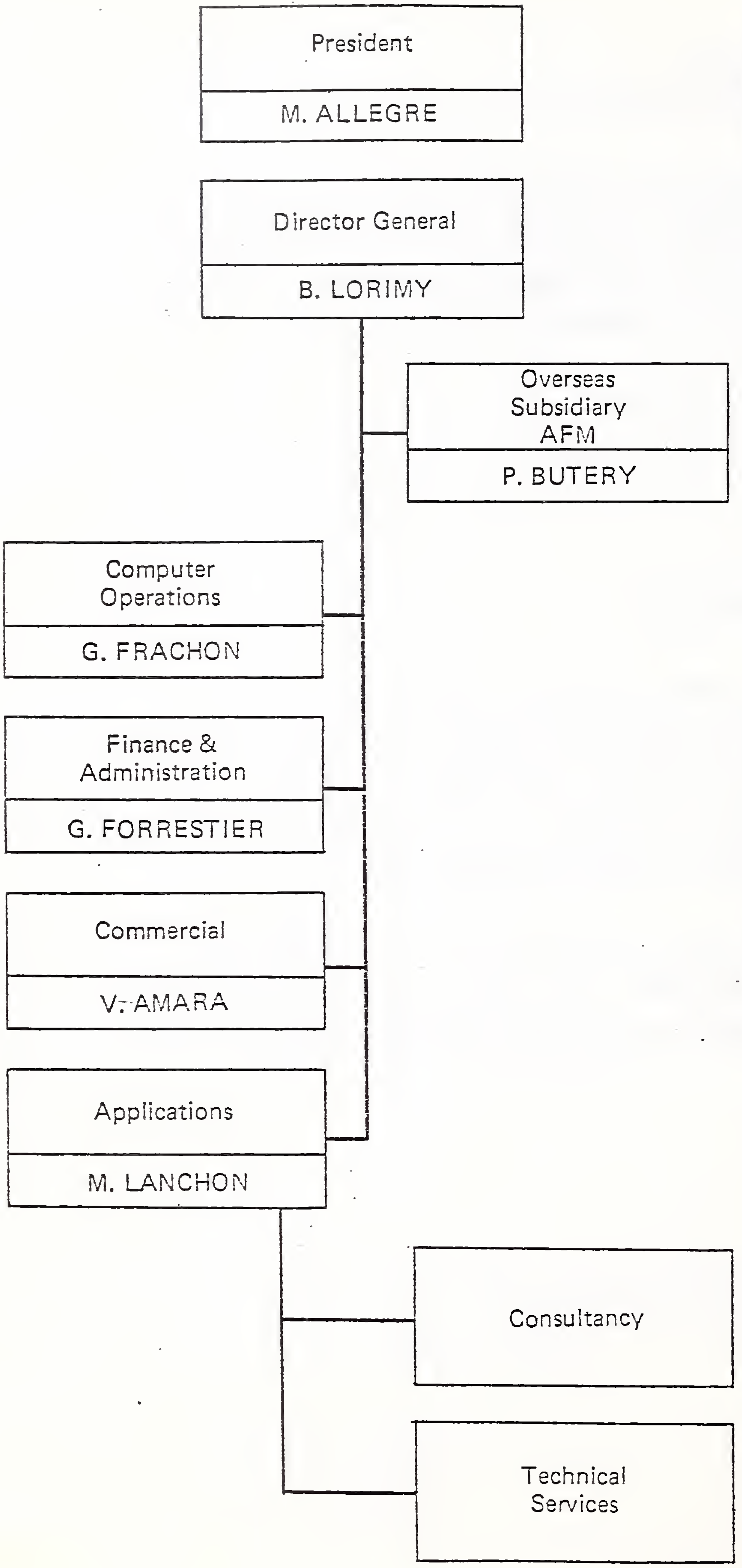
7. OVERALL IMPRESSIONS

- Set in beautiful grounds adjacent to the IFP management training centre, FRANLAB exudes an academic atmosphere. The offices are excellent but not excessively luxurious. The computer room is something of a disappointment, since the equipment is actually in a number of different rooms and can therefore not be seen in total from any one place.

- Security was good and the documentation was excellent and written in some cases in French and English. The quality of staff encountered was very high. Franlab is an impressive company, but not typical of SG2 as a group, (see SG2).

ANNEXE – FRANLAB/A

ORGANISATION CHART



Staffing:

Computer Operations	50
Applications	60
Admin./Finance	20
Commercial	15
Total	145

ANNEXE - FRANLAB/B

APPLICATIONS AND SOFTWARE

Note: numbers in parentheses indicate the number of programmes available in the category.

1. **Languages & Utilities (14)**
   - Languages (BASIC, COBOL, FORTRAN)
   - Utilities (file handling)
   - Libraries (Mathematical and Plotting subroutines)

2. **Mechanical Applications (32)**
   - Finite Element Analysis
   - Finite Differences
   - Finite element and integral equations
   - Reinforced Concrete
   - Plotting and mesh programs
   - Special Programs (Pipe Stressing, Flange Design, ground construction)
   - Thermal Stress Analysis
   - Structural Analysis

3. **Marine Hydrodynamics (23)**
   - Wave Models
   - Hydrodymanic Forces - Large bodies
   - Hydrodynamics Forces - Frame structures
   - Simulation of behaviour of structures at sea
   - Mooring
   - Pipe Laying
   - Liquid Motion in Tanks
   - Meteorology, Climatology, Oceanography
   - Refraction - Harbours
   - Pollution

4. **Reservoirs (6)**
    - Simulation models
    - Thermodynamic equilibrium calculations

5. **Chemical Engineering (1)**
    - Petrochemical Unit design

6. **Accounting (2)**
    - accounting
    - payroll

7. **Decision Assistance (9)**
    - Linear Programming
    - Distribution
    - Scheduling

8. **Data Analysis (12)**
    - Poll Analysys
    - Cartography

9. **Management Information (5)**
    - Data bank
    - Automatic Documentation

10. **Forecasting (5)**
    - economic & market models
    - short term sales forecasting
    - long time series
    - optimisation of funding

G. GENERAL ELECTRIC INFORMATION SERVICES SA.

G. GENERAL ELECTRIC INFORMATION SERVICES SA.

SENIOR EXECUTIVES

GENERAL ELECTRIC INFORMATION
SERVICES SA.
Tour Atlantic
9280 Paris La Defense

Tel: 776.44.92

President : B. Cavaille
* Sales Director : T. Klocanas
Finance Director : P. Rodger
* Director Industry Branch : P. Lacoste
* Business Analysis Manager : R. Bazian
* Account Representative : M. Morel

* Direct Contacts with Input

---

1. BACKGROUND

- General Electric Company (USA), in conjunction with Dartmouth College (USA) initially developed a time sharing service based on the GE 200 series computers. This service "MARK II" was one of the first, commercially available timesharing services in the mid sixties and it moved quickly to the UK and Europe as the market for time sharing developed.

- When GE withdrew directly from the computer business, Honeywell Bull became the distributor for Europe in 1972. In 1976 there was a merger between Honeywell Bull and CII (CII-HB). Simultaneously a new timesharing company (HB-NIS) was formed, mainly to avoid letting the timesharing interests of GE becoming controlled by the new (French) owners of CII-HB. The new company operated until January 1979 when GE acquired control and established the new name "GEIS".

- The ownership today is GE 84% and Honeywell 16%. The president (Mr. B. Cavaille) of the French company reports to the European headquarters in London (see organisation chart attached).

- The Mark III GECOS system was the result of the fusion of the Mark II time sharing software and the GECOS operating system (developed originally for high security military applications on GE 600 series computers). Since the network for time sharing was established in the sixties, it has grown very rapidly.

2. ORGANISATION & PERSONNEL

- The basic structure is set out in some detail as Annexe-A. It can be seen that the total staff in France numbers 120 with some 50 staff providing technical sales support, 20 in marketing and sales directly, a further 12 concerned with operations management and 8 in the internal finance and accounting function.

3. HARDWARE

- The hardware is organised into three interconnected "Supercentres" located in Cleveland, Rockville and Amsterdam. These three centres house sixteen H 6080 mainframes, an IBM 370/158 and an IBM 3033 (undergoing acceptance tests and intended to replace the 370/158 in October 1979). The IBM equipment uses the OS/VS2 Operating System.

- In Europe there are six principal concentration centres: England (2), Italy France, Germany and Scandanavia.

4. NETWORK & TERMINALS

- The great strength of the GEIS network is the fact that more than 500 towns can access the network across 14 countries and 4 continents. The design of the network gives good back-up features and low telephone line costs for many users who can obtain the advantages of local call costs to a GEIS node (access point).

- The access points are :

Country	Number of Access Points
France	22
UK	16
Germany	11
Italy	10
Holland	4
Sweden	3
Belgium	3
Austria	2
Norway	2
Switzerland	2
Ireland (Republic)	1
Finland	1
Denmark	1
Spain	1
Total	79

- In addition to these locations, plans exist to extend the service to Venezuala and Brazil and to enhance the existing service at Jeddha.

- Terminals supported vary according to one of four basic network speeds.

50 baud < Telex ≤ 200 baud
201 baud < low Speed ≤ 300 baud
301 < medium Speed ≤ 1200 baud
1201 < high Speed ≤ 4800 baud

- The telex service supports telex and teletype terminals. For speeds from 100 to 300 bauds the Terminet 30 or 300 is the standard terminal, the Terminet 30 having the advantage of a full 132 print position carriage. Both are for asynchronous networks in half or full duplex mode.

- The Terminet 1200 has a maximum carriage width of 120 characters but can print up to a theoretical speed of some 120 characters per second using a 1200 baud line. Four models of Plug compatible asynchronous visual displays are suggested (Hazeltine 2000, Data Speed 40, Data Point 3300 and Tektronix 4012).

- The high speed service (1200 - 2400 baud) is called "MCS" (RJE in IBM parlance). Supported RJE terminals include IBM 2780, Data 100, MDS 2400, Honeywell G115 Series 700 and SVENA-DSI. Also supported as terminals are IBM 360/370 mainframes with OS or DOS and suitable controllers (2701, 2703, or 3705). Experiments with a new TI terminal - the Mark Link System (MLS) are in progress.

- In France, GEIS claim to be supporting regularly have more than 400 interactive terminals on-line during normal business hours.

5. SERVICES

- Many of the commonly found time sharing facilities are available:

  (a) Wide range of languages and several versions of some (FORTRAN, COBOL, ALGOL, BASIC, PL/1, Assembler)
  (b) database software (DMSII, HISAM)
  (c) statistical routines (STATSYSTEM II)
  (d) Graph Plotting (PLOT II)
  (e) Financial Modelling (Tabol II, FALCON FORECAST, MAP, FORCES STATSYSTEM)
  (f) Mathematical Modelling (MPSS)
  (g) Specialist Banking Applications
  (h) Specialist Salary Planning & Personnel Management Applications

- Most significant by their absence are references to the more complex scientific and engineering packages (e.g civil engineering, stress analysis, electrical circuit design, plant simulation). The emphasis is on time sharing for corporate planners, management scientists and commercial systems analysts. The service has less appeal for research workers with complex science and engineering problems to solve. However, GEIS has obvious advantages for multinational organisations wishing to access common data-banks from different countries.

- It should be noted that users are limited to maximum file sizes of 5 Mch in Foreground mode on Mark II and 90 Mch in Background mode. Thre is little emphasis on the IBM services, (and GEIS staff seem to know little about them).

Service Availability

- Services are normally 24 Hours, 365 days per year, but 22 hours per day is the limit of guarantee in contracts. Up-time is said to be 99.5% (of availability) or better and restart/recovery time is said to be a maximum of 10 minutes.

6. MARKETING

- Support services are grouped both by geographical zones and by industry specialties. On the organisation chart Functions marked 'D' are geographical territories whilst those marked 'B' are industry specialties. These are as follows:

B12	Banking and insurance
B13	Electrical, Aeronautics, Electronics
B21	Services, Conslutants, Hotels, Travel
B22	Heavy Industry, Cars, Steel
B23	Chemical, Petroleum, Food & Beverages

- Historically, the GE Mark II service was widely used for the development of relatively small programs requiring small processing storage, small files and not involving a great many instructions. Although the Mark III service offers much enhanced facilities, the emphasis of advertised applications expertise still indicates a tendency to use the system for commercial problems rather than engineering or scientific applications.

- GEIS has strenght in simulation and statistical work connected with Banking, Production, Finance/Treasury and Personnel. All of these problems typically involve small databases but often quite complex structures.

- The GEIS facilities offer a good range of database software and interactive working methods, and conversely little emphasis on the use of terminals capable of handling large volumes of data.

7. OVERALL IMPRESSIONS

- A professional but stiff attitude was encountered, with expensive, luxurious offices with plenty of working space for clients available.

- The documentation available is informative and of a very high standard.

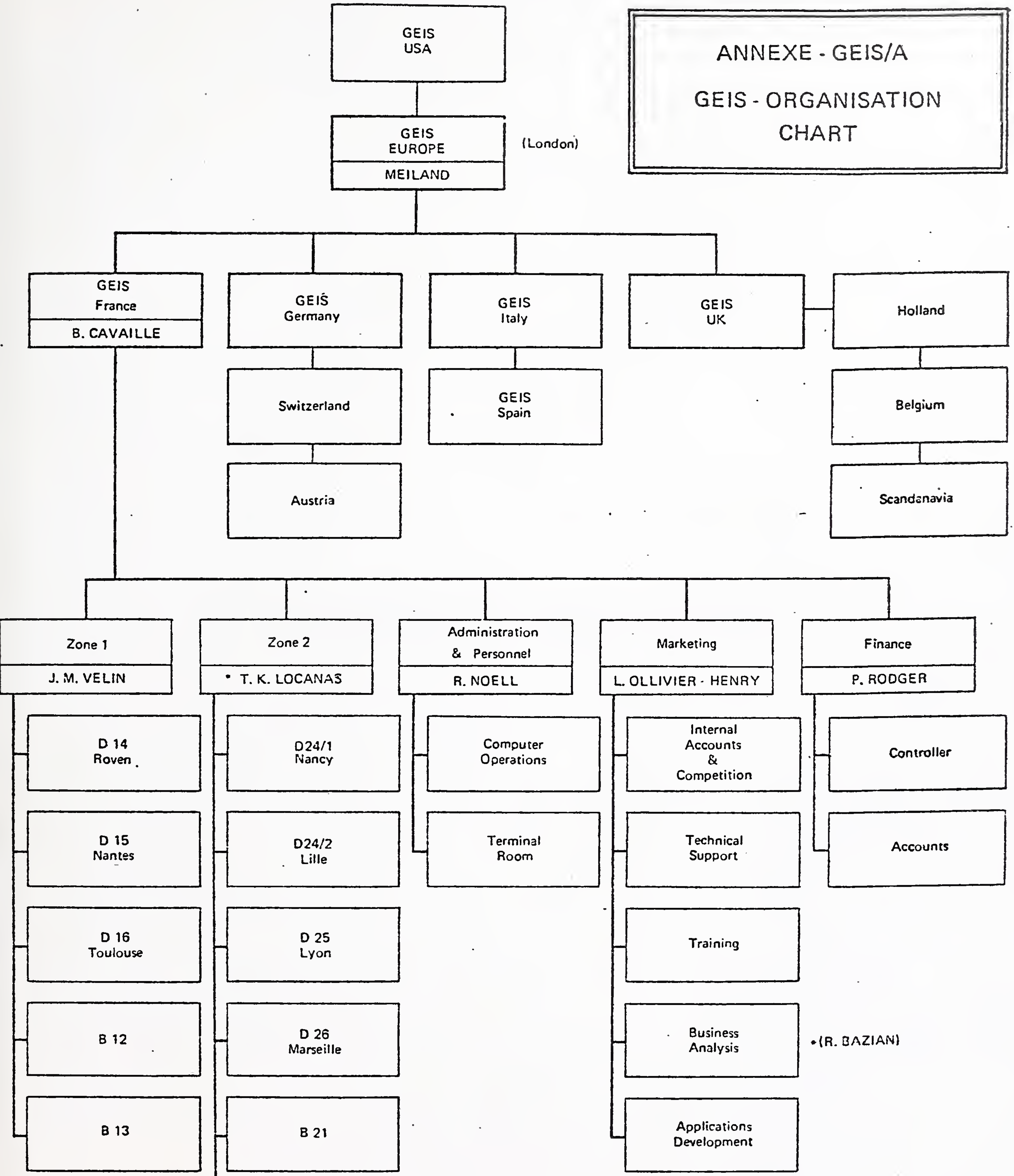
- The available expertise is on MARK III Time Sharing as opposed to IBM RJE and it is doubtful whether GEIS are yet capable of providing a viable IBM technical support service.

- Three people were involved in trying to enter a batch IBM job from an RJE terminal. They finally abandoned the idea. They were unprepared to get involved in a conversion activity.

- The IBM JCL problems could not be resolved. GEIS kept asking how many records were on the files (an irrelevance).

ANNEXE - GEIS/A

GEIS - ORGANISATION CHART



Staffing GEIS SA:	
Sales Support	80
Marketing	20
Admin/Personnel	12
Finance	8
TOTAL -	120

Legend:

D = Geographical Sector;

B = Application Specialism

• Direct Contacts with Input

H. GSI GENERALE DE SERVICE INFORMATIQUE

H. GSI GENERALE DE SERVICE INFORMATIQUE

GSI GENERALE DE SERVICE INFORMATIQUE
127 Avenue Charles de Gaulle
92200 Neuilly

Tel: 758-97-50

SENIOR EXECUTIVES OF GSI

President :Jacques Raiman
Marketing Manager : Patrick Gordon

CS INFORMATIC
14 Rue Forest
75018 Paris

Tel: 292-02-77

SENIOR EXECUTVES OF CS INFORMATIC

Director General : M. Genovesi
Commercial Director : A. Reuminiac
Manufacturing Director : R. Colin

---

1. BACKGROUND

- GSI is the second largest computer services organisation in Europe and is of French origin. The organisation is multi-national and in total now encompasses 2900 staff and a combined group turnover of 600 MF (budget 1979). These figures include a recent aquisition, NATEL, which itself is budgeted to produce a revenue of 150 MF from 900 staff. The turnover of GSI is therefore expected to be in excess 400 MF without NATEL.

- GSI was formed in 1971 from two companies, CSI and III (Institut International d'Informatique). Today, excluding NATEL, it comprises 20 subsidiaries or branches in France and seven overseas subsidiaries which are:

Country	Subsidiary	Maniframe Vendor
Italy	Elaborazione Automatica Dati (EAD)	Siemens
Germany	Datel Gmbh	Siemens

UK	CRC Information Systems Ltd	Xerox
Switzerland	GSI - Suisse	IBM
USA	GSI - USA Inc	DEC
Belgium	Interdata	IBM
Spain	Seresco	IBM

- GSI is owned 52% by the French electrical company CGE and 24% each is held by Societe Generale and Credit Commerciale de France.

2. ORGANISATION & PERSONNEL

- The following breakdown of Personnel was given:

GSI France		
Administration	10	
Sales	100	
Managers	100	
Analysts/Programmers	300	
Computer Operations	990	
	1500	
GSI International		500
GROUP TOTAL		2000

- It is apparent from these figures that the majority of revenue is derived from bureau operations rather than from the work of analysts and programmers directly. The new acquisition NATEL was approximately 900 staff. Thus GSI inclusive of NATEL was 2900 staff which will make it the largest computer services organisation in Europe in 1979.

3. HARDWARE

- It was not possible to obtain a comprehensive hardware inventory from the one sales manager in the time available, however, there are in Europe some 40 substantial mainframes of significance of which 20 are located in France. The principal vendors by location are:

Paris Locations	IBM 370's and Univac 1108
Grenoble	Itel AS6
CRC Ltd (UK)	XDS Sigma 9's
Italy & Germany	Siemens 4000 series
Switzerland/Belgium	IBM
Seresco (Spain)	IBM

- GSI is planning to phase out the Sigma 9's in use for scientific time sharing. The plan is to offer customers a choice of DEC 2020 or IBM 4300 machines to run in-house some of the applications that formerly ran on the SIGMA machines maintained by Honeywell since it took over RXDS customer base. Honeywell's maintenance agreement expires in 1983.

CS Informatic Hardware

- This organisation is housed in modest accommodation. The computer room is rather congested and an extension is under construction. In the computer room there are two IBM 370/155's (3 MB), one PDP11/70 operating as a front end processor to one of the 370's and an Interdata minicomputer.

- The 370's are hardware enhanced with M1 on one system and M2 plus DATBOX on the other. There are 16 tape drives, 6 x 800 MB STC fixed disc drives and a bank of Memorex (IBM 3330 equivalent) 100 MB exchangeable disc drives. In addition, there are four IBM 1403 line printers and a Data 100 terminal. A high speed back-up link is available to another 370 in Paris.

- One of the 370's operates as a real-time system providing synchronous 9600 BPS data communications facilities with vdu terminals. One major user of this facility is Renault with 20 vdu terminals installed. The other 370 is front ended by the PDP 11/70 which provides 16 ports to a synchronous network.

- Plans exist to replace the two 370/155's with either an Amdahl 470/V6 or an Itel A6. A decision is to be made shortly.

4. NETWORK & TERMINALS

- There is a strong emphasis on the developing time sharing network which links forty European cities including ten in the UK and six in Germany. On-line applications highlighted include seat reservations, financial consolidatiion, banking and stock exchange services and on-line supply and demand matching.

- GSI claim their network can be accessed from almost any type of terminal.

5. SERVICES

- Vehicle Dealers

  GSI is helping over 600 dealers selling automobile, commercial vehicle and farming equipment with a package called IDS.

- Turnkey Systems

  "TOLAS" is the brand name for the DEC-based turnkey system produced by GSI Inc. Through GSI's subsidiary Transcomm, the TOLAS system is being applied in Europe. It is particularly designed for the distribution industry.

- Classic Accounting/Payroll Services

  GSI has considerable strengths in this area partly due to the way if has grown by acquisition from bureaux who provide the basic payroll, sales, purchase and nominal ledger accounting services. The package name ZADIG encompasses these packages. GSI operates the largest payroll service in France.

- Scientific Applications

Computer aided design and market research analysis are two of the simili-scientific applications offered. With GSI's background, its main emphasis must be the use of science in commercial and business applications rather than in scientific approaches to engineering problems. Computer aided design is one of the exception's to this trend.

- Banking Applications

GSI in Switzerland has developed a specialist real-time banking systems package. Some 80% of GSI Suisse's revenue comes from the banking sector.

- Text Processing & Information Retrieval

Using IBM's STAIRS package, a judicial database is being constructed.

- Service Availability

- 24 hour service for Batch and RJE, Monday through Saturday.

- No Sunday working, except by arrangement.

- Some public holidays not worked.

6. MARKETING

- Of the 400 MF sales turnover for GSI (excluding NATEL) 80% or 320 MF is produced by GSI France and 20% by GSI international.

- National operations can be divided into:

		MF
-	Provincial Sales	90
-	Paris - Large Company Sales	150
-	Paris - Small Company Sales	80
	TOTAL	320 MF

- With the exception of GSI Inc, all companies are primarily general or special purpose computer bureaux. GSI Inc. is a turnkey systems house which specialises in the supply of DEC 11-based systems.

- The Belgian and Italian bureaux are classic general service bureaux providing payroll and accounting services. Seresco is one of the largest service bureaux in Spain. Datel in Germany provides specialised package services to operators. CRC in the UK specialises in scientific time sharing services.

- Product Orientation

    - GSI's marketing strategy is firmly product orientated;they are not primarily interested in selling advice. Clients are "steered" towards package solutions as appropriate and custom tailoring is carried out where necesary.

    - GSI sees client processing as having three phases of evolution:

Phase 1:	Development of basic payroll and accounting systems.
Phase 2:	Development of "Operating" applications outside the accounts function. Examples include order processing, reservation systems and production planning and control.
Phase 3:	The re-development of accounting systems with emphasis on integration of budgets, financial accounting

and management accounting. Examples include sophisticated operating statements giving budget and actual comparisons with year on year comparisons, financial plans and automatic draft budget generation. Improvements will also include increased use of on-line VDU enquiry facilities and in the 80's, more emphasis on financial planning models, financial control and decision assisting systems.

- Broadly, the belief is that the early accounting systems do little more than basic book-keeping. Now the future emphasis is on re-development of key systems to make Applications fit management and operating needs more closely. New products are required (and are being developed).

- Rationalisation

GSI is harmonising its image, after many years of acquisition and standardising, where possible, hardware and software products. CRC, the UK subsidiary, has now been re-named GSI UK Ltd and the RXDS hardware is to be phased out and replaced with DEC 2020 and IBM 4300 series mainframes. The DEC 2020 has been selected in preference to the Sigma Compatible CP-V operating system developed by Honeywell even though this software package enables a smooth transition from Sigma series machines to the Honeywell level 66 equipment. This move follows a similar move by ADP (Automatic Data Processing) for the use of DEC 2020 systems which are fully compatible with the DEC 10 time sharing equipment.

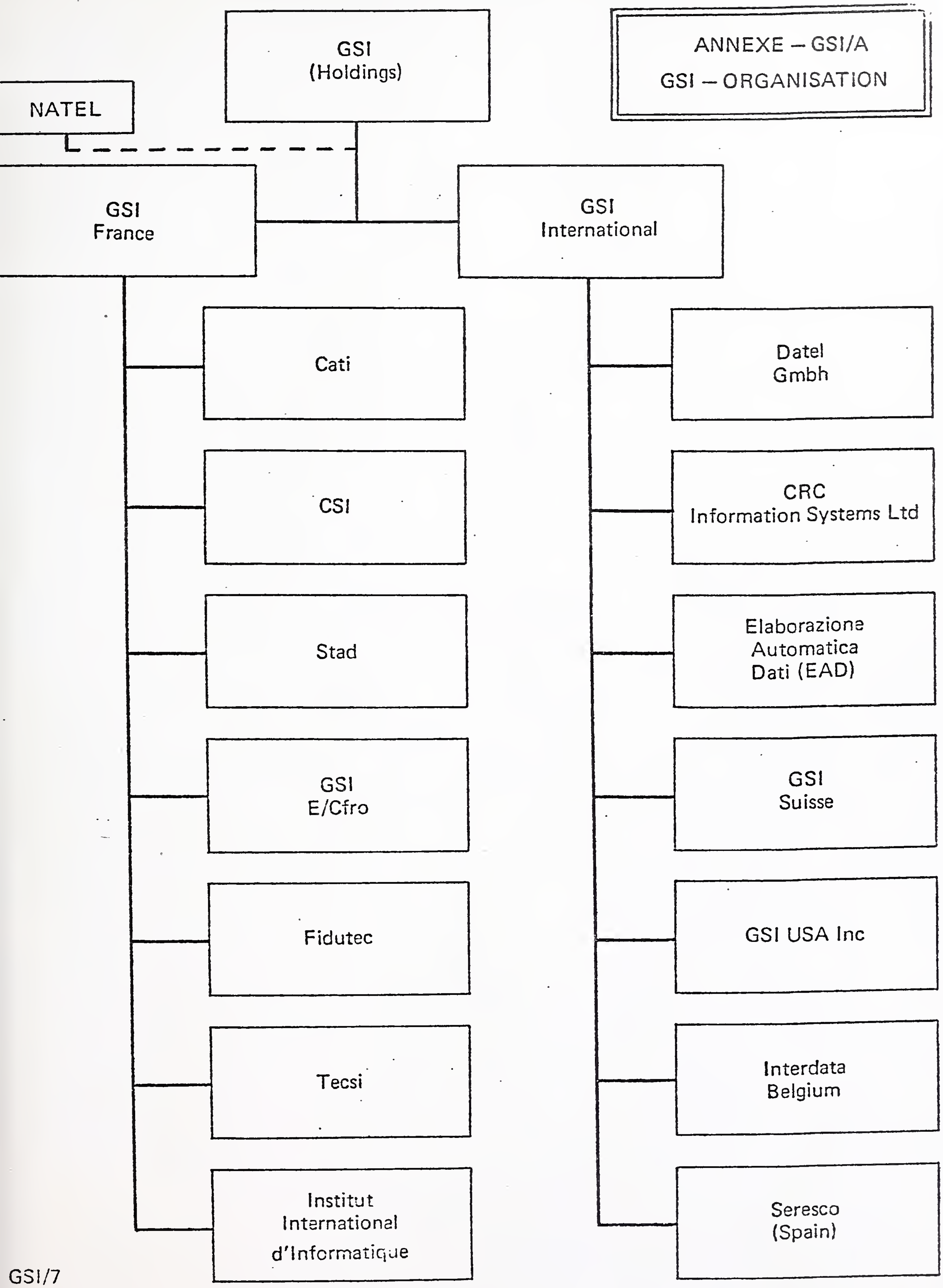
7. OVERALL IMPRESSIONS

- One could not fail to be impressed by the scale of GSI's operation seen in the context of a really enthusiastic subsidiary staff (so often large groups have disenchanted subsidiaries).

- CS Informatic obviously enjoy being part of the group and provide from modest premises a feeling of high quality professionalism. The staff were also well informed about the wider group of which they are a part. Documentation seen was extremely well written and presented.

- The staff on hand was very helpful and capable. There is little space, however, for clients/prospecs to work in off the street and start converting/testing progammes.

ANNEXE – GSI/A
GSI – ORGANISATION



I. COMPAGNIE IBM FRANCE

I. COMPAGNIE IBM FRANCE

COMPAGNIE IBM FRANCE
Tour "Septentrion"
20 Avenue Andre Prothin
92081 Paris La Defense

Tel: 776-43-43

SENIOR EXECUTIVES

President : J. Lemonnier
Director General : S. Lamay
Commercial Director : G. Fauque
District Managers : J. Lacrouts
: F. Corbasson

CONTACTS

Grand Groupe Industriel

- Mr. Coeur de Vey
- Mr. A. Herscovici

---

1. BACKGROUND

- The IBM Service Bureau is a division of IBM France. Geographically, the service Bureau has 17 locations in France, four of which are in Paris and 13 in the Provinces. Annexe-A shows the principal locations.

2. ORGANISATION & STAFF

- The Organisation chart in Annexe-B shows two District Managers. The Service Bureau is managed by Mr. F. Corbasson and he has a total staff comprised of some 600 persons which include a technical complement of about 150. Sales turnover figures for IBM Service Bureau are not provided, but if their income per head is in the same region as the independent companies, the overall sales revenue would be of the order of 200 MF per annum now.

- The IBM staff is numerically small in relation to the number of large mainframe computers available, which indicates that the type of support provided on a technical level must be specialised and limited.

- At the Sablons service bureau for example, there are 4 large 370 mainframes and a number of technical specialists who appear to be organised by software speciality. There is a special group for languages, a specialist group for time sharing services and so on. These staff are only permitted to advise, not to actually 'fix' client problems and this practice is rigorously observed.

3. HARDWARE

- A list of the current IBM mainframe hardware is given in Annexe-C. Some 14 mainframes,(mostly IBM 370/158 or 370/168 power) are installed and running under a variety of different software systems, according to the service requirement.

4. NETWORK & TERMINALS

- There are seven principal methods of connecting on-line to IBM's mainframe computers:

o	Telex	(to 200 BPS)
o	Dial-Up	(Standard Telephone to 1200 BPS)
o	Dial-Up CADUCEE	(2400 to 9600 PBS)
o	Leased Line	(1200 to 4800 BPS)
o	START-STOP	(most towns in the Provinces
o	BSC	(Strasbourg, Nantes and Bordeaux)
o	SDLC	

- The selection of line speed and network type depends upon the service required and the termnals used, which typically include IBM 2741, 3707 and 72 CMC for

START STOP asynchronous modes or IBM 3270 or similar for Binary Synchronous Communication (BSC) or for RJE work, IBM 3774 and 3775 in SDLC mode. Also in RJE mode, one can use the IBM 2780, 3780, 3777 or plug compatible alternatives in conjunction with leased lines or the CADUCEE network.

5. SERVICES

- Eight different principal software operating systems are available:

  CALL
  VSPC
  APL
  TSO
  TBS
  VM/CMS
  OSCA
  Batch Processing

- The first, the mainly conversational time sharing system (CALL) is not available to IBM's mainframe customer installations, but its successor VSPC (Visual Storage Personal Computing). CALL is only available via the service bureau. CALL offers BASIC, FORTRAN IV and PL/1 and The "APPLICATION SYSTEM" available with CALL is also available with VSPC.

- APL is fast increasing in popularity everywhere, and France is no exception. IBM are featuring APL as a problem oriented language for solving problems quickly with concise coding which is especially good for scientific and business modelling applications. Some customers are also using APL as a business systems language. APL users can have a maximum of 120 KB of memory on an interactive basis.

- TSO is designed to permit the development, on an interactive basis, of programs to run under the MVS operating system. The main languages supported are COBOL, FORTRAN AND PL/1. There are also syntax checking products for FORTRAN and ASSEMBLER.

- For engineers, there is an interactive version of the structural analysis package STRUDL available under TSO.

- TBS (or Terminal Business System) is primarily intended as a tool for simple development of straightforward commercial applications. Languages for programming are BASIC, PL/1, COBOL and ASSEMBLER as there are two high level report generators, REPORT and GIS.

- VM/CMS is designed to permit interactive program development for a DOS or OS virtual storage environment. The service is supported from the Reaumur centre in Paris.

- OSCA is intended to bridge the gap between the CALL user and batch processing. It is a French development which simplifies the tasks of graduating from CALL to a mainframe environment.

- Batch Processing services are mainly available from the centres at Sablons (Paris), Lille, Marseille and Lyon. The Paris centre operates under MVS, but the other three locations operate under OS/VS1. Languages supported are, COBOL, FORTRAN H Extended, PL/1, ASSEMBLER and BASIC.

- Special Products

  Special products exist for a variety of Applications. Here are some of the principal package names:

Financial Modelling	AS
Accounting	TANGE
Budgeting	ECART

Payroll/Personnel	PAILION/PAILOR
Stocks	SLICS
Production Planning	CAPOSS
Production Control	PRINCE

- Service Availability

  The Sablons centre and other centres are available Monday to Friday from about 7.30 a.m. to 7.15 p.m. for the submission of jobs. Work submitted by 7.15 p.m. is run overnight.

6. MARKETING

- IBM market both geographically and by industry sector under the DP Division organisation. Within the Service Bureau itself, technical support is organised by software product, in the main.

- There is going to be a strong push on VSPC to link together IBM's installed machine base customers with the services of the bureau (previously inhibited by CALL).

- IBM's marketing of interactive services tends to be weak due to the technical support emphasis on software rather than Applications. IBM's interactive service customers tend to be capable of developing their own Application problems. However as financial modelling, budgeting and accounting applications evolve towards greater compatibility at the database level, tools such as VSPC should gain in popularity with IBM customers who have IBM mainframes installed.

7. OVERALL IMPRESSIONS

- IBM are so big that it was difficult initially to contact the department that could provide the right type of assistance. Having arranged a visit to undertake benchmarks, IBM spent one hour explaining why the results would be worthless and trying to persuade the interviewer to give up the idea.

- With persistance, a job number was obtained (an incorrect one as it turned out) and the interviewer was taken to Sablons to discuss the JCL changes needed. The technical specialists advised and the first bureau runs were made.

- The centre has fast turnaround, helped considerably by the very high speed 3800 laser printer. However, the large libraries of software and the narrow specialties of staff make progress from one JCL problem to the next, slow. After four visits two of the three benchmarks were working. N22 could not be run, since IBM do not support FORTRAN H anymore.

- No working space for clients was offered or seemed to be available. Overall, the impression was one of a clinical approach cloaked in excessive bureaucracy. The service would be good for people who are familiar with red tape and expert in IBM's JCL and library procedures. The service is expensive.

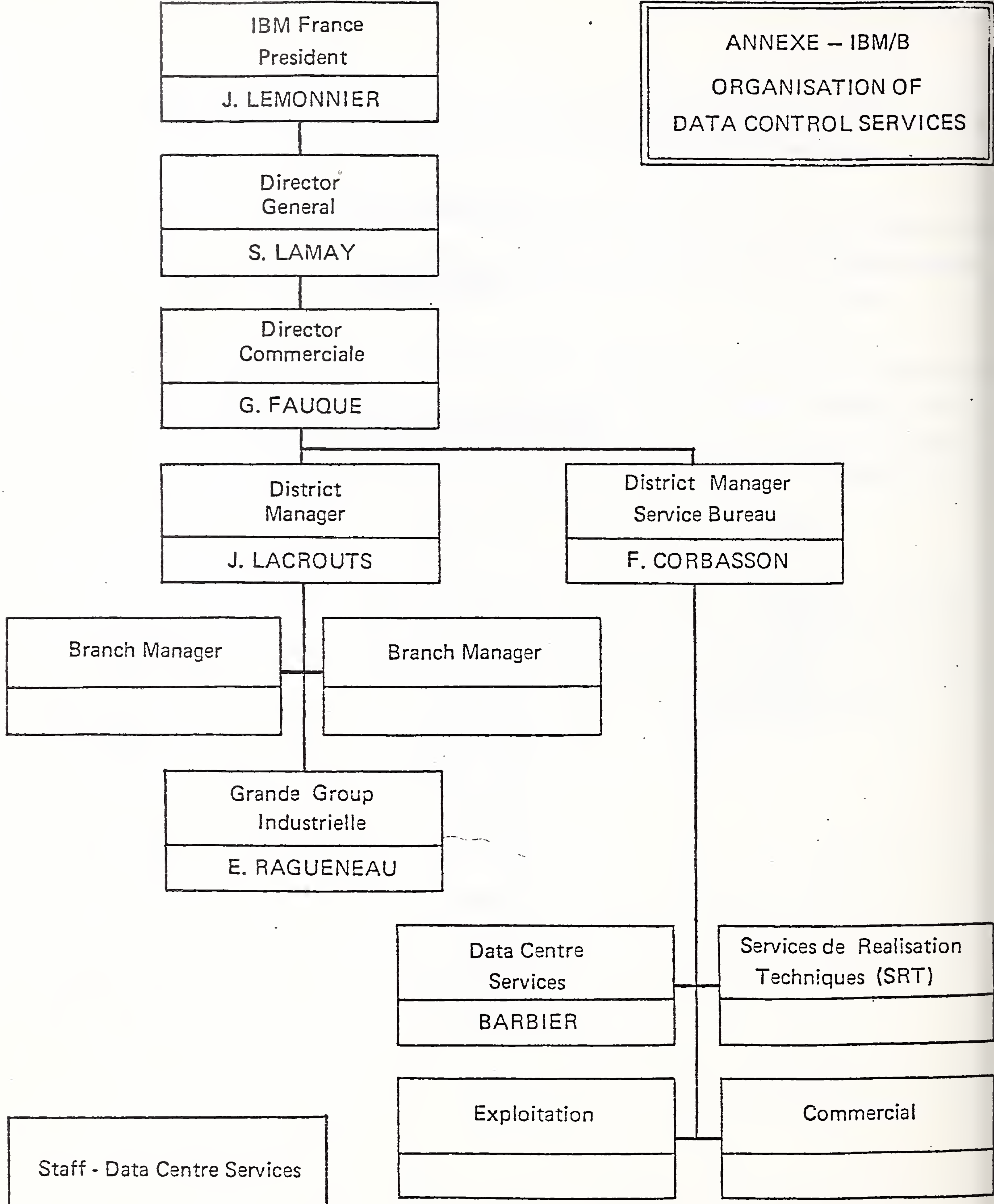
ANNEXE - IBM/A

IBM FRANCE

SERVICE BUREAU LOCATIONS

Paris	Provinces	Overseas
Sablons	Bordeaux	Abidjan
Reaumur	Grenoble	Alger
Boulogne	Lille	Antanarivo
Septentrion	Marseille	Casablanca
	Montpelier	Dakar
	Nancy	Libreville
	Nantes	Noumea
	Nice	Papeete
	Orleans	Pointe a Pitre
	Rouen	Rabat
	Strasbourg	Saint Denis
	Toulouse	Tunis
4	13	13

ANNEXE – IBM/B
ORGANISATION OF DATA CONTROL SERVICES



Staff - Data Centre Services

SRT	150
Other	450
TOTAL	600

Tel: 010-33-1-776-43-43

ANNEXE - IBM/C

IBM DATA CENTRE SERVICES

- Computer Centres

Location	Equipment	Comments
Sablons (Paris)	1 x 370/168-3 (4mb)	1 for Batch Processing
	3 x 370/158 (2mb)	1 for Call 370
	(4mb)	1 for TBS
		1 for Back Up
Reaumur (Paris)	2 x 370/158 (5mb)	to be replaced shortly
	2 x 370/148	
Boulogne (Paris)	1 or 2 x 370/158	Educational Centre
Septentrion (Paris)	1 x 370 148	To be closed down shortly
	1 x 370 158	
Lille	1 x 370/145 (768K)	
Marseille	1 x 370/145	
Lyon	1 x 370/158 (1,536K)	

- Applications Programs

Some 500/600
Some French, Some English, Some Mixed.

- Private Network Link to Sablons

Accessed via some 41 locations in Paris and the provinces.

J. SOCIETE GENERALE DE SERVICE ET DE GESTION (SG2)

J. SOCIETE GENERALE DE SERVICE ET DE GESTION (SG2)

SENIOR EXECUTIVES SG2

President : Mr. Lhermitte
Director General : Mr. Moineau
Sales Director : Mr. Boudard
Finance Director : Mr. Bourelly

Societe Generale de Service et de Gestion (SG2)
12 Avenue Vion-Whitcomb
75016 Paris

Tel: 521-52-22 SG2

CONTACTS - TELSYS

Account Manager : Christian Lucio

Telsys Informatique
20 Boulevard de la Muette
95140 Garges-les-Gonesse.

Tel: 986-96-49 TELSYS

---

1. BACKGROUND

- SG2 was founded in 1970. The six principal shareholders of SG2, its sixteen wholly owned or partially owned subsidiaries and associatesare itemised as follows:

Principal Shareholders (6)

- o Rhone Poulenc (4%)
- o CNRO (5%)
- o Societe national ELF Aquitaine (5.2%)
- o Institut Francais du Petrole (IFP) (6.8%)
- o Inforbis (30%)

Principal Subsidiaries (14)

CASEC
CETINE (80% owned)
CRTI (50% owned)
GIB2
LI
SG2 I
SG2 NORD

o Societe Generale (49%)	SUGEOR	
	TELSYS	(90%)
	TGS	(100%)
	GABON INFORMATIQUE	
	HANDAD	
	SG2 CI	
	SGS	
	FRANLAB	(20%)
	SITEX	

- Note: SG2 shareholding indicated in parentheses

- Two of the companies of interest from the point of view of benchmarks are TELSYS and FRANLAB. FRANLAB is the subject of a separate Vendor Summary.

2. ORGANISATION AND STAFFING

- Taking SG2 as a whole, including companies with SG2 participation, the total number of employees was 1800 in 1978. If wholly owned subsidiaries only are considered, the total SG2 staff number just over 1500 of which approximately 400 or 25 are involved in professional services (Consultancy Analysis and Programming.

- The Telsys subsidiary has 200 staff organised as shown in Annexe-B. This number comprises some 130 technical staff, a computer operations team of 20 plus 30 data preparation staff and the balance of 20 is made up of sales an administrative staff.

3. HARDWARE

- Processing centres by subsidiary, together with their mainframes, are shown in Annexe-B (FRANLAB excluded). The list itemises 32 mainframes ranging in scale from the small IBM Systems 3/10 and 34 to the ITEL AS6 and the CII-HB 66/05.

- The Telsys installations are housed in a magnificent computer room in the centre of the main offices. The configuration is as follows:

Item	No.	Description
Processors	1	ITEL AS 5 (3Mb)
	1	ITEL AS 6 (4Mb)
Data Comm.	1	3705
Exchangeable Disks	20	3330/1
	20	3330/11
Fixed Disks	8	3350
Mag. Tapes	24	3420 (160-6250 BPI)
Printers	4	3211 & 1403 (on-line)
	1	DATA 100 (off-line)
Data Prep.	1	CMC 180 (32 terminals)

- The AS6, according to the Benchmarks, appears to be significantly faster than the 370/168-3.

4. NETWORK & TERMINALS

- The principal network services are provided by the CII - HB 66/05's of CRTI, the ITEL machines of TELSYS and the Burroughs B3700 machines of TGS. Most of the other machines are not large enough to provide significant networking facilities except by behaving as RJE terminals to larger machines installed elsewhere. An exception could be the IBM 3031 at Aix-en-Provence.

- The IBM 370/168 is used for special services in the context of the back-up centre at Paris (see below). TELSYSsupport in excess of 100 terminals from their centre.

5. SERVICES

- The SG2 group as a whole has strong banking and commercial data processing service origins. The Franlab involvement (20%) brings a completely different type of service into the association. Given these origins, (as one would expect) payroll and accounting services are comprehensive and varied.

- Services offered by SG2 which are less common in France include:

  - Computer Equipment Installation and Maintenance
  - Text Processing
  - Microfilming (including Computer Output to Microfiche or Microfilm)
  - Cheque processing
  - Training and Seminars
  - Customer Back-Up Centre

- The only one of these that requires some explanation is the Customer Back-Up centre. This is a relatively new concept in data processing history. The principle is that the cost of the centre is divided into three parts: (i) one-third of the costs are recovered by means of a monthly charge to participating firms in exchange for a guarantee of immediate back up if needed in an emergency; (ii) one third is paid for by program testing by clients charged on a discounted basis and carried out on an understanding that if an emergency need arises, the work is shelved as low priority. The other third is paid for and used by SG2.

- The TGS Burroughs machines are used primarily for real-time insurance applications and the SG2 based B3700's are used for Carte Bleue processing services. The Univac machines in the SG2 group are used mainly for cheque sorting.

- TELSYS main services are :

  - consultancy, analysis and programming
  - payroll & personnel services (CRESUS)
  - accounting (PLOUTOS)
  - interactive stock control/invoicing (HECTOR)
  - training

  In addition to these services, TELSYS has opted for ADABAS and MARK IV for database work insteas of IMS.

- The training division of TELSYS one of few available in France of significance. Twenty different courses are featured in the brochure. These are essentially for analysts and programmers and cover languages, operating systems and Job control, teleprocessing systems analysis and commercial applications.

- Telsys Bureau Availability

  The Telsys bureau is normally operated on a 24 hour basis six days a week including bank holidays. Sundays can be worked by special arrangement.

6. MARKETING

- Clearly SG2 has considerable strength in the banking and insurance sector and through its regional centres, it provides a wide spread of general payroll and accounting services. Looking at the hardware table it is evident that there is too broad a machine range and many of the machines are obsolete as well. Evidently there will be some conversion problems to contend with and this will have significance for the marketing policy.

- The Telsys installation however is extremely modern and the ITEL machines are known to provide better cost performance than the nearest IBM equivalents in the 370 series. No doubt the 303X series will redress this balance.

- The batch processing local service bureau operation at the Telsys centre operates a simple work schedule and there is only one tariff structure for work priority. This policy is apparently standard within the SG2 group.

- It is SG2's policy to provide networks on a regional basis as the need develops.

- Sales per employee for SG2 in 1977 were 172 MF per person which is low.

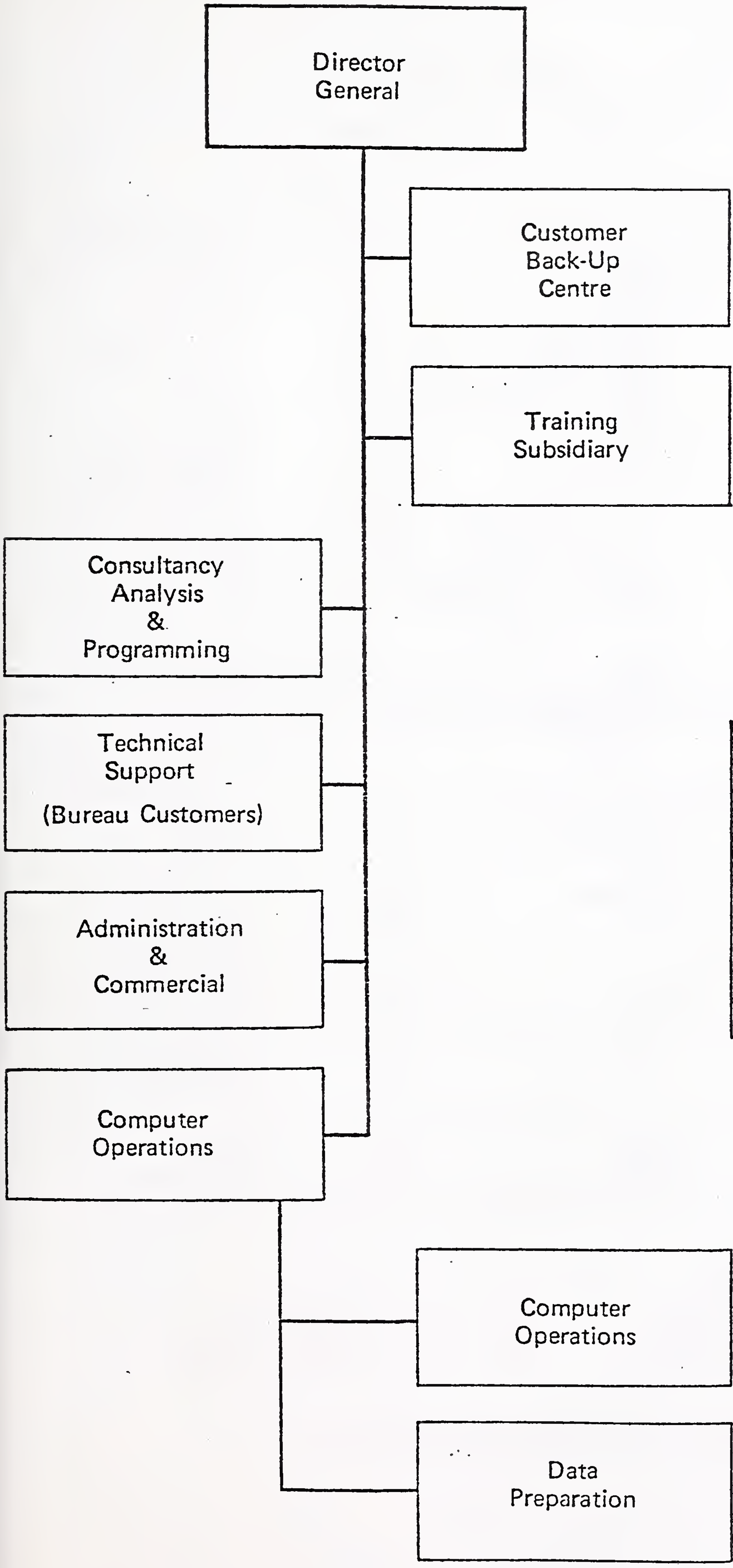
7. OVERALL IMPRESSIONS

- The quality of personnel seen at Telsys and Franlab (discussed elsewhere) is first class, and both centres are open, friendly and extremely helpful. The smaller centres equipped with less up to date equipment could hardly be up to the same standards.

- The computer rooms of Telsys and Franlab are both very impressive, well laid out and free of any apparent pressure. Indeed there was a feeling of freedom from pressure and bureaucracy in both locations.

- Documentation provided by Telsys was good,but not quite so impressive for SG2. The image portrayed by the SG2 material is professional but rather dull and old fashioned. Telsys and Franlab exude contemporary excellence.

ANNEXE – TELSYS/A



Staffing:

Sales/Administration	20
Technical	130
Computer OPS	20
Data Preparation	30
TOTAL	200

ANNEXE - TELSYS/B

HARDWARE SUMMARY

COMPANY	LOCATION	AREA	MAINFRAME
SG2	Paris	P	370/168
	Paris	P	ITEL AS5
	Lille-Seclin	N	370/158
	Lille-Seclin	N	Univac 90/20
	Lille-La Madelaine	N	B 2700
	Lille-La Madelaine	N	GE 105
	Creil	N	System 34
	Valenciennes	N	Univac 90/30
	Bordeaux	SW	GE 105
	Aix-en-Provence	SE	B 3700 (x2) 3031
	Aix-en-Provence	SE	IBM 3031
TELSYS	Garges-Les -Gonesse (Paris Environs)	P	ITEL AS6 ITEL AS5
COFI	Paris	P	370/145
CETINE	Fourmies	N	370/138
CRTI	Lorient	B	2 x CII-HB66/05 bi-processor
CASEC	Bordeaux	SW	GE 105 B 3700 (x2)
	Limoges	SW	Gamma 10
	Pau	SW	Gamma 10 GE 130 (x2)
GIB 2	Brive	SW	Philips 1075
TGS	Lyon	RA	B3700 (x3) ITEL AS5
SOGEOR	Tours	CW	360/30
	Angers	CW	System 3/10

Area codes

P	= Paris				
N	= North	B	=	Bretagne	
SW	= South West	RA	=	Rhone - Alpes	
SE	= South East	CW	=	Centre - West	

Note

Extracted form SG2's November 1978 brochure.

K. SOCIETE POUR L'INFORMATIQUE

K. SOCIETE POUR L'INFORMATIQUE

Societe Pour L'Informatique
28 bd Victor - Hugo
92115 Clichy

Tel: 739-94-40

President : J. Alamercery
Director Gerneral : F. Duphil

* External Affairs : A. Perrichon
* Principal Input Contact

---

1. BACKGROUND

- SPI was established in 1974 as a subsidiary of Pechiney Ugine Kuhlmann (PUK). Previously it was their informaton systems department. Turnover last year was approximately 65 MF.

2. ORGANISATION & STAFF

- The organisation is shown in some detail in Annexe-A. The total headcount is just under 200 persons of which computer operations and directly associated technical support accounts for 72 people.
- There are three other main divisions one responsible for the systems development and sales support of PUK, one for systems development and sales support of all other external clients and one for the construction applications packages. The numbers of staff in each division are shown on the diagram.
- The smallest division comprising 23 staff is concerned with package development and maintenance.

3. HARDWARE

- Annexe-B shows the principal mainframe hardware. Recently an IBM 3032 was installed to replace a 370/158 and the remaining 370/158 has increased main memory (now 5 Mb). An order for a second 3032 has been placed to replace the IBM 370/158.

- The configuration of the two processors is arranged to give a high level of system resilience (see Annexe-C).

- An IBM 8100 is on order for delivery in the first quarter of 1980.

4. NETWORK

- The number of lines by type of network shown below indicated good network capacity:

Network Service	No lines	Speed (BPS)
Telex	56	50
CADUCEE	5	2400-4800
Dial-Up	12	300 -1200
Transplex	2	300 & 600
Special Lines	40	300 to 19,200

- The special lines are for 2 or 4 wire point to point or multipoint synchronous communications with or without multiplexing.

- Plans exist to tie into Euronet and to offer Transpac packet switching facilities (end 1979).

- For remote batch users, there are some 30 terminals in use. The models listed are Data 100, IBM 3741, 3774 and 3776, small computers System 32 and from CII - HB the 61/60 and 62/40. There are in addition 8 x 3790 IBM minicomputers connected.

- For transaction and remote batch processing, there are about 150 terminals connected. These are IBM 3270 vdu's (or compatible plug compatible equivalents) IBM 3767 or 2740 keyboard printers and for asynchronous line there are Teletype ASR 33's (or plug compatible equivalents such as Hazeltine, Anderson Jacobson or Texas Instruments).

- The total transaction load from all sources on the central system is said to be in the region of 25,000 messages per day.

5. SERVICES

- The applications are almost exclusively those one finds in a commercial data processing environment. Also featured are the software tools available to assist the development of computer applications involving real-time and database techniques.

- Applications highlighted are:

    o SCIMMO: - Assets Management
    o GESPER: - Payroll (real-time)
    o PGCF: - Accounting (real-time)
    o PROGESCO: - Invoicing (real-time)
    o OIGC: - General Accounting
    o GESTRA: - Vehicle Routing
    o SPIDEL: - International Labour office Rules- Database

  In addition to those applications services, the TELEX service is offered.

- Service Availability

  24 Hours a day Monday to Friday and Saturday Morngin. Same day service is available from 7 a.m. to 7 p.m.

6. MARKETING

- PUK is evidentally a very important client and there is one Division dedicated to PUK support comprising 28 people. There is also a department in the Technical Support Division dedicated to PUK Systems.

- The main marketing is structured into functions as follows:

  - Document Processing
  - TELEX
  - Accounting and Personnel Systems
  - Distribution, Production and Stock Control
  - Applications Package Sales
  - SPIDEL (specialised Information Retrieval Service)

- The high capacity fixed disc storage together with emphasis on IMS, DL/1, MARK IV and SPIDEL and the use of IBM's STAIRS package shows a strong database orientation. The other key marketing feature is the transaction based accounting and payroll service.

7. OVERALL IMPRESSIONS

- SPI appears to be rather similar in many ways to Alliance Informatic. It is smaller, with 200 (Alliance has 310) persons on the payroll, however the hardware arrangement is impressive in terms of the duplexing and cross over switching.

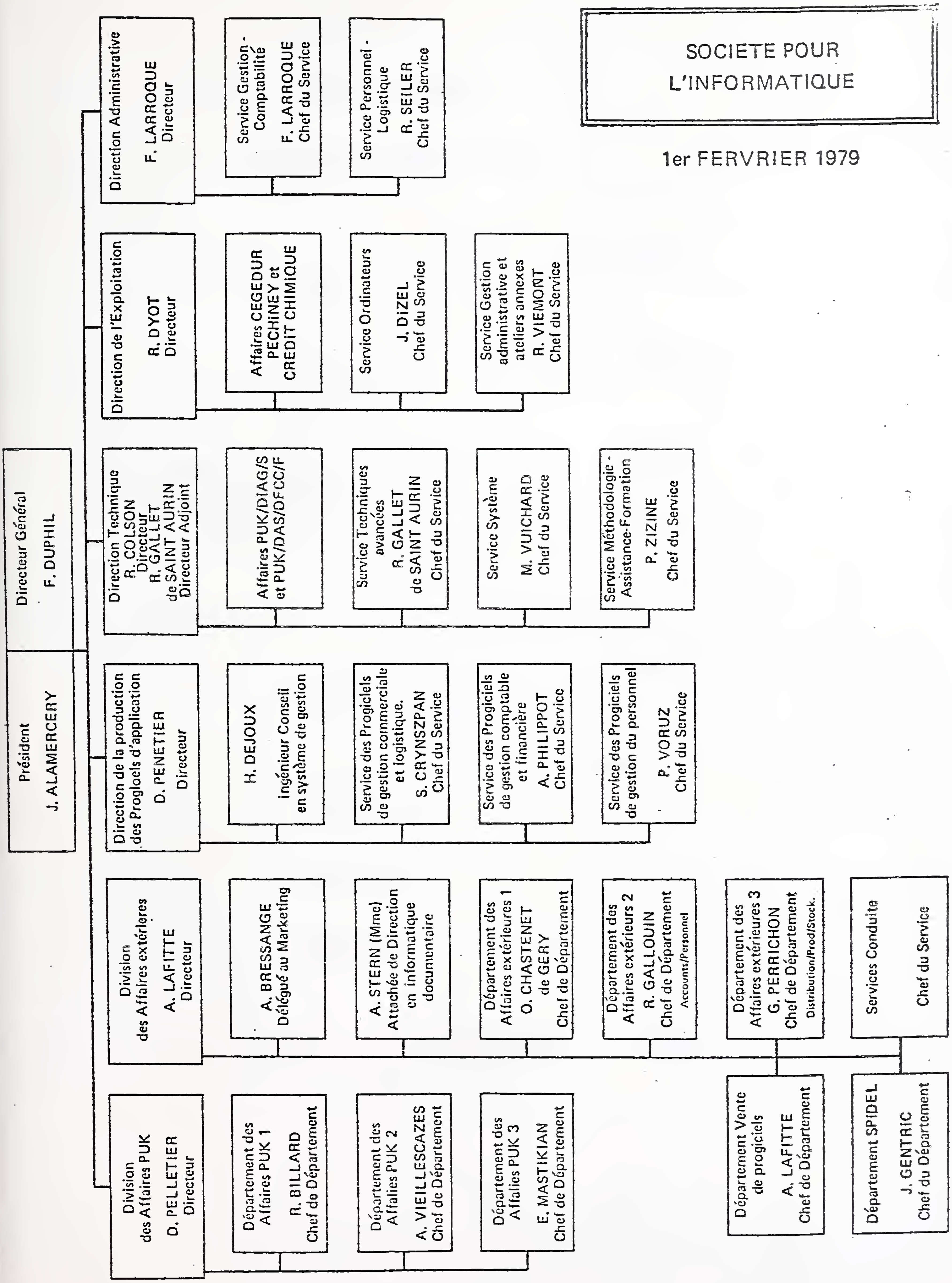
- Marketing is organised around applications rather than industries which has the disadvantage that the account specialists who may miss opportunities with their clients in functional areas with which they are not familiar.

- The computer room is spacious, well laid out and the offices are excellent. The overall impression is that this company has good expertise, up to date hardware and knows where it is going. However, it does appear to be rather heavily supported by PUK business.

- There could be too much dependence on PUK for support and this may mean that other clients (some 200) may not get quite as good a service as PUK can demand.

SOCIETE POUR
L'INFORMATIQUE

1er FERVRIER 1979



MAINFRAME HARDWARE

Mainframes	1 IBM 3032 x 6 Mb 1 IBM 370/158 - 1 x 5 Mb
Disks	50 x 3350 drives of 317 Mb each. Drives include 5 controllers.
Tapes	18 Units of 9 track 6250/1600 BPI 1 Unit of 9 track 1600/800 BPI (6250 BPI tapes have transfer rate of 470Kb/Sec) There are 3 tape controllers
Printers	2 x 2000 1 pm 3 x 1100 1 pm
Card Readers	1 x 800 cpm 1 x 300 cpm
Card Punch	1 x 300 cpm
Comms. Control	2 x Data 100

Note: All Disks and Tapes are switchable to either processor.

L. SLIGOS

L. SLIGOS

SLIGOS
91, rue Jean Jaures
92807 Puteaux

Tel: 776-42-42

President : G. Bauvin
Director General : Gerard
Sales Director : C. Bret
Computer Manager : A. Peyronnet
Sales Representative: J. Sahut

---

1. BACKGROUND

- SLIGOS is one of the larger bureaux in France, having a turnover in 1978 of $56.5M. The principal shareholders are Credit Lyonnais (80%) and Tymshare (20%). SLIGOS was created in 1972 from SLIGAS and CEGOS (a subsidiary of Credit Lyonnais). The company moved into its present building in 1974. About 75% of SLIGOS revenue comes from computer operations and contract computer operations services and 25% of the revenue is derived from consultancy, analysis and programming.

2. ORGANISATION & STAFFING

- The organisation chart for SLIGOS is shown in Annexe-A. There were 1300 personnel in the group in 1978 of whom 800 were employed in France. Of these, 200 were employed at Blois and 600 in Paris.

- The staffing analysis is as follows:

Administration	20
Sales	45
Professional Services	335
Computer Operations	
Technical	54

Computers	40
Scheduling/Control	40
Data Preparation	100
Contract Operators	170
	804
Say	800

The most interesting features of this organisation are the large data preparation and contract computer operations services.

3. HARDWARE

- Processor 1
    - 370/158 x 3 Mb
    - Disks: 14 x 100 Mb EDS (3320 Type 8 x 317 Mb FDS (3350 Type)
    - Tapes: 10 x 9 track 1600/6250 BPI; 2 x 7 Track
    - Printers: 4 x 1100 1 pm (1430/s)
    - Data Comm: Memorex 1270 - Concentrater

- Processor 2
    - 370/155 x 768 Kb
    - Disks: 16 x 100 Mb EDS (3330 Type)
    - Tapes: 2 x 1600/6250 BPI; 9 Track
    - Printers: 1 x 1100 1 pm (1403)
    - Data Comm: Memorex 1270 - Concentrator

- Processor 3
    - 370/145 x 1 Mb
    - Disks: 16 x 100 Mb EDS (3330 Type)
    - Tapes: 10 x 1600/6250 BPI; 9 Track
    - Printers: 2 x 1100 1 pm (1403's)
    - Data Comm: Memorex 1270 - Concentrator

- Processor 4

PDP 10	(1024 K Words)
Disks:	4 x 200 Mb EDS 3330 Type
Tapes	2 x 1600/6250 BPI; 9 Track
Printers:	1 x 900 1 pm
Data Comm:	Tymshare/Varian V73 hardware

- The IBM 370/145 uses DOS/VS. The 370/155 uses APL/DVS R 25 and the 370/158 is being upgraded to VS 2 R1.7. The PDP10 is being commissioned now for time sharing use.

- The tapes and fixed disks are from STC; the exchangeable disks are from Memorex.

4. NETWORK & TERMINALS

- SLIGOS believes that the association with Tymshare and Sharp Associates means a network configuration of very superior performance.

- The software monitor used for real-time is SHADOW (from ALTERGO in London) and they also support TSO from IBM and APL. They do not use IMS for database work. The Shadow monitor is used mainly to support a special application for Renault.

- The network is supporting about 140 terminals for transaction processing and just under 30 for RJE use. The terminals used are from the well known vendors. Anderson Jacobson are most popular for transaction processing and the IBM 3741 is used mostly on the RJE network.

5. SERVICES

- The major on-line services are to Renault who have a real-time application via the SHADOW software which involves nearly 30 vdu terminals (CIT TRANSAC

- IBM 3270 compatible). Also supported are 8 ADDS vdu's in Carte Bleue who have an on-line enquiry system in operaton.

- The principal time sharing service is APL, but the PDP 10 will take over this task when commissioned.

- Two file handling packages are SLIGOS proprietary services. COMPTEL 1 is for conventional file handling and COMPTEL 2 is their own database management system. They believe it gives better operational control and security than IMS.

- The main payroll package for large companies is PAGOS and there is also INFO 2000 for small payrolls. They have several packages for general accounting and a proprietary on-line order processing package. There is no specific package for financial modelling.

- The most unusual sevices are the large data preparation and contract computer operating services in which more than 250 personnel are involved. SLIGOS are developing strongly in professional services (consultancy and turnkey minicomputer systems) and they have some 70 staff engaged in contract programming.

- Service Availability

  Services are Monday to Sunday inclusive, 19 hours a day public holidays excepted.

6. MARKETING

- Sligos is almost a total service company with prime markets in commercial computer bureau services, timesharing, contract programming, data preparation and computer operations. It does not have a scientific orientation.

- The hardware base is good and the PDP 10 will improve the quality of time sharing services considerably for SLIGOS.

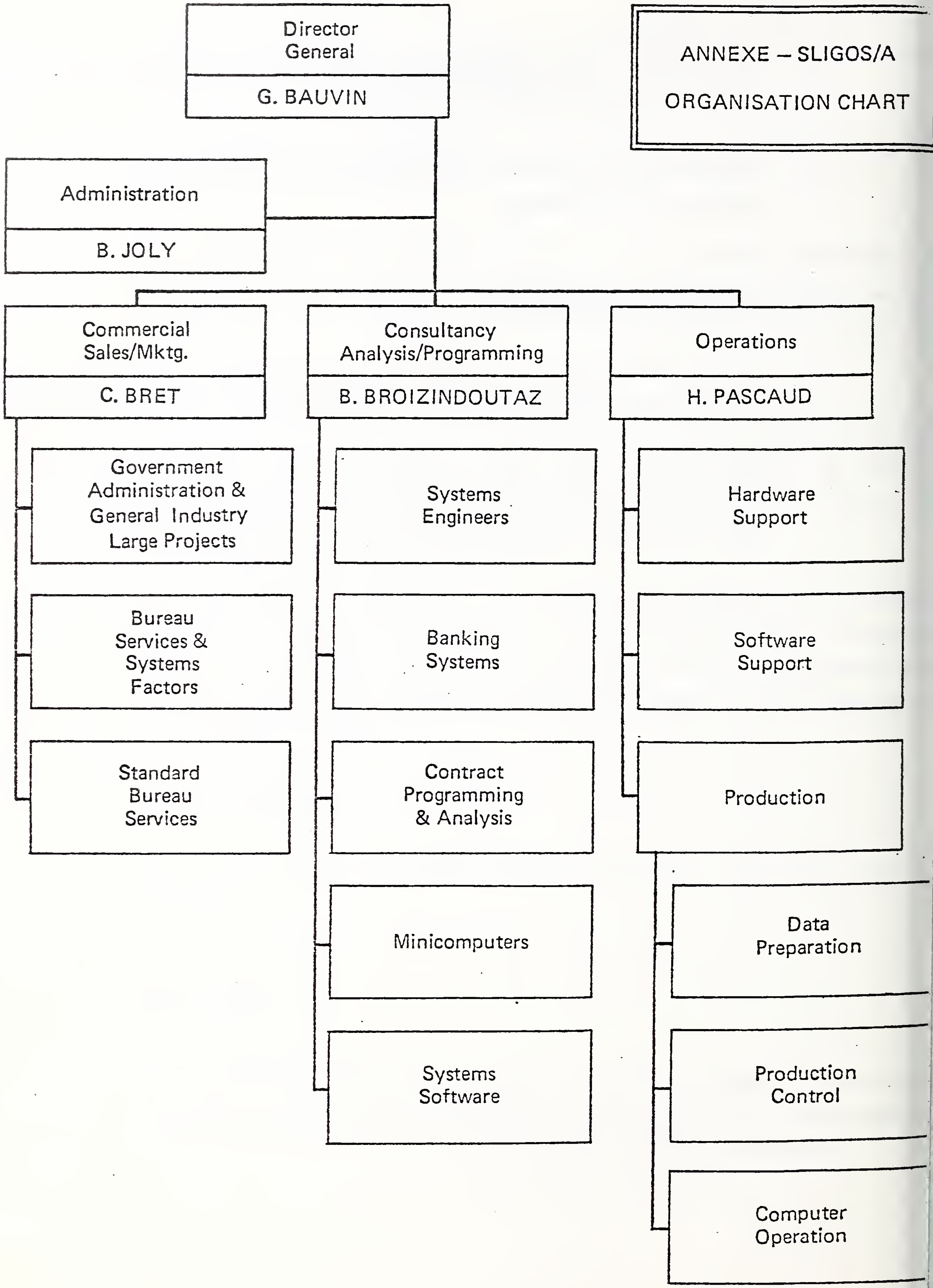
- SLIGOS has the strength of personnel to be in the big league. It has a small Brussels office in Belgium.

7. OVERALL IMPRESSIONS

- Although the company is impressive, the accounting representative and the computer room manager were not. This fact should probably be discounted.

- The computer room was well organised although the managers offices were small and poorly furnished. The low sales per employee is undoubtedly due to the large number of data preparation and contract operators involved.

ANNEXE – SLIGOS/A
ORGANISATION CHART



M. SYSTEMES DE TELECOMMUNICATIONS ET D'INFORMATIQUE

M. SYSTEMES DE TELECOMMUNICATIONS ET D'INFORMATIQUE

Systemes de Telecommunications et d'Informatique
115, Rud du Bac
75007 Paris

Tel: 544-38-98

10 Rue de Verdun
92 100, Boulogue

Tel: 604-65-65

President : J. Treves
Director General : P. Daemaely
(Joint) Y. Pelier
Network Services Manager V. Drachovs
* Sales Manager : M. Dellis
* Tech Executive : E. Abitbol

* Key INPUT Contacts

---

1. BACKGROUND

- Telesystemes is one of the larger scientifically based computer bureaux in France. In 1978 it achieved a sales revenue of 170 MF. It began in 1969 with a group of ex CII employees and today the major shareholdings are:

  - France Cables et Radio 87.9%
  - Enterprise Generale Des Telecommunications 6.5%
  - Companie Francaise de Cables Telegraphiques 5.6%

- Telesystemes has two wholly owned subsidiaries: Telesystemes do Brasil and SETIB. The principal services offered on the network can be classified in six areas, each of which is described briefly below.

2. ORGANISATION & STAFF

- The attached organisation chart (see Annexe-A) shows the way in which the market is viewed. Basically there are three main functions:

- the banking service
- network computing services
- network transmission services

There are approximately 600 employees in the Telesystemes organisation.

3. HARDWARE

- A list of the principal installations is shown in Annexe-B. There are some 20 mainframe computers installed (if one includes the machine owned by COMSHARE) and the vendors represented are quite varied. The emphasis however is on CDC Cyber 73's and HB 66's, with the Cyber 73's in use mainly for RJE and the HB-66's in use for time sharing. The other mainframes are for special services (see 5).

4. NETWORK AND TERMINALS

- Network Services include:
    - Telex
    - Transplex
    - Time Sharing
    - Remote Batch

- The telex network provides low speed computer improved telex services to existing Telex users (e.g. automatic repetitive message distribution to multiple locations)

- The Transplex network provides more than 30 companies with access on a shared basis to more than 300 channels in a multiplexing asynchronous network. The network is managed by Telesystemes and has been available since the beginning of 1977. Some 40 access points provide line speeds from 50 to 1200 bauds across France.

- Time sharing services are based on the use of XDS 940, XDS Sigma 9 and Honeywell 66 computers. The XDS machines use the Commander I and Commander II operating system from COMSHARE, which supplies the Sigma 9 computer power (Comshare has 11 Sigma 9 computers and the Telesytemes link is to a London based machine).

- The H66 services is termed "Eurodial" and the computer is based in Boulogue. This service is for general purpose problem solving and there are some 42 access points in France.

5. SERVICES

- The prime service offered is facilities managed computer installations, offering remote batch (RJE) and time sharing computer services.

- Remote Batch Services

  Besides the remote batch facilities implicity available on the time sharing network, there are more than twelve regional facilities. These are based in key geographical locations and there is very good coverage in Paris and where there are four Cyber 73's an Iris 80 and an H66 available.

- Financial Planning

  Commander 1 and II services offer high computer power at the terminal and a range of software packages of particular interest to scientists, engineers, management sciences specialists and those concerned with financial planning, the prime market area of COMSHARE who provide the computer power. The COMMANDER I & II service is run on a franchise basis by Telesystemes.

- Cheque Processing

This is a specialised service operated on a managed facilities basis for a group of banks the central processors are two Burroughs B7000 series machines.

- Scientific Abstracts & Information Retrieval

There is a relatively new production service that has typically been the subject of research projects for several years. A CII Iris 80 (bi-processor) computer is located in Nice and is organised to provide information retrieval from specialised databases covering the fields of Chemistry, Medecine (Medline), Agriculture and Human Sciences. The database capacity is large at some 11,000 megabyles.

- Telex & Transplex

These are network facilities managed by Telesystemes and are described in section 4 above.

6. MARKETING

- The network computing services under Mr. Drachovsky cover time sharing and remote batch support of packages (available on the network) and professional services for external projects. A commercial department negotiates customer contracts for bureau services and when signed, a customer is assigned a technical "account manager". Areas where specialist groups exist are:

    - Financial Planning
    - Structual Analysis
    - Database design
    - Management Information
    - Education and Training
    - Accounting
    - Data Preparation and Distribution

- The Cyber 73's installed regionally are particularly well suited to the scientific market and the good regional coverage is a major strength. They have some 35 different clients for this type of service.

- Applications Area

  Examination of the standard brochure reveals special strengths in Financial Planning, Engineering (Mechanical, Civil and Electrical), Mathematical and statistical routines, and Operational Research (Linear Programming and PERT).

- Information Retrieval

  The major specialty of rarity is clearly the processing of scientific abstracts and the information retrieval facilities that are implicit in such systems.

- The scientific abstract service is a very specialised market and Telesystemes also support a suite of financial analysis programs for use with a specialised databank of information on companies covering 11 countries. This databank is supported by the Eurosyndicat Investment Research Bureau.

- With the Honeywell Eurodial and the Comshare time sharing services there must be a dilemma in which service to market as a priority for some applications (e.g. financial planning). One competitor said that Telesystemes is not very actively selling the COMSHARE service. There are some 150 clients using the time sharing services.

- The other feature emphasised by Telesystemes was their special networking effectiveness. This they believe is due to the technical liaison with Tymshare of USA who they believe have some of the best hardware ava

7. OVERALL IMPRESSIONS

- Due to the broad geographical scatter of facilities, no meaningful impression can be given of the physical environment. However, the two persons interviewed were very professional and commercially perceptive.

- Documentation provided was not particularly impressive bur nevertheless adequate. The sales manager produced some good presentation foils whilst the INPUT interviewer was there.

- The offices visited at 10 Rue de Verdun are modest to the point of being cramped. However, Telesystems sales per employee are very high. There is a direct correllation between sales per employee and the type of bureau activity. The scientific bureaux appear to generate higher sales per head due to three factors:

    - Scientific applications generate more machine usage and machine charge per man year of technical support

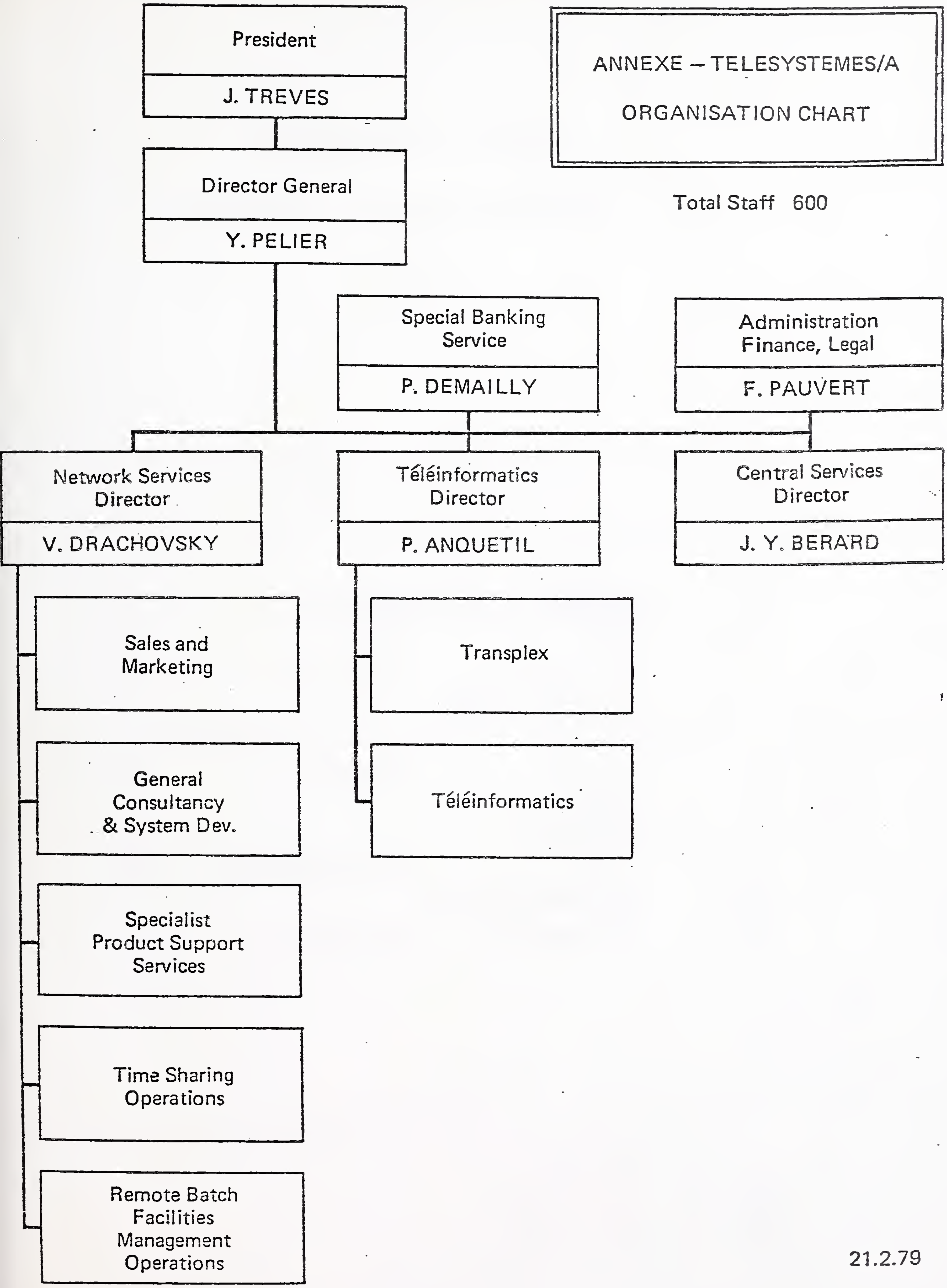
    - Scientific applications involve low data preparation costs

    - Scientific applications involve less computer operator involvement.

ANNEXE – TELESYSTEMES/A

ORGANISATION CHART

Total Staff 600



21.2.79

ANNEXE - TELESYSTEMES/B

SUMMARY OF PRINICPAL HARDWARE

No CPU's	COMPUTERS	USE	TYPE
2	XDS 940	Commander 1	T/S
1	HB 66	Eurodial	T/S
1	XDS SIGMA 9 (Comshare Owned)	Commander 2	T/S
8	Cyber 73	Client use	R/B
3	HB 66		R/B
1	CII IRIS 80		R/B
2	B 7000	Cheque Processing	R/B
1	CII IRIS 80 (DUPLEX)		
1	SIEMENS 4004	Special Purpose	F/S

* T/S = Time Sharing
R/B = Remote Batch
F/S = Free Standing

V APPENDIX : VENDOR TARIFFS

V APPENDIX : VENDOR TARIFFS

APPENDIX : TARIFFS

A. ALLIANCE INFORMATIQUE

- SERVICE CATEGORY & PRICE

  The basic unit of measure is the "Unit of Service" as the rate at priority "E" is 0.40 FHT.

- DISCOUNT FOR VOLUME

Annual Client Revenue 000's Francs (HT)	Basic Rate FHT	Discount %
0 - 75	0.40	-
75 - 225	0.375	6.5
150 - 225	0.350	12.5
225 - 300	0.325	18.75
300 - 375	0.300	25.00

APPENDIX : TARIFFS

A. ALLIANCE INFORMATIQUE

- SERVICE CATEGORY & PRICE

The basic unit of measure is the "Unit of Service" as the rate at priority "E" is 0.40 FHT.

- DISCOUNT FOR VOLUME

Annual Client Revenue 000's Francs (HT)	Basic Rate FHT	Discount %
0 - 75	0.40	-
75 - 225	0.375	6.5
150 - 225	0.350	12.5
225 - 300	0.325	18.75
300 - 375	0.300	25.00

ALLIANCE INFORMATIQUE

TARIF ORDINATEUR 370
MODELES 158 ET 168
SYSTEMES D'EXPLOITATION M.V.S. ET S.V.S.

BASE DE
VALORISATION
1.01.1979

ÉNERGIE
INFORMATIQUE

GÉNÉRALITÉS - FORMULE DE VALORISATION
DES RESSOURCES CONSOMMÉES

1 GÉNÉRALITÉS

La présente base de valorisation entre en vigueur dès sa date d'émission.

ALLIANCE INFORMATIQUE se réserve la possibilité de la modifier sans préavis. Son application est soumise aux règles contractuelles établies d'un commun accord entre l'utilisateur du produit ou service en référence, et ALLIANCE-INFORMATIQUE.

2 FORMULE DE VALORISATION DES RESSOURCES CONSOMMÉES EN MODE LOCAL

Les ressources ordinateur consommées sont valorisées par la formule suivante, en unité de consommation (U.C.).

COEFFICIENT (C)	RESSOURCES (R)	UNITE DE MESURE
$a = 5,625$	CPU	Seconde
$b = 1,4 \times 10^{-3}$	Mémoire	K octet (2) x temps théorique (3)
$c = 26 \times 10^{-3}$	Disque	Nb d'accès disque
$d = 17,4 \times 10^{-3}$	Bande	Nb d'accès bande
$e = 62,5 \times 10^{-3}$	Bande	Nb dérouleurs x temps théorique (3)
$f = 17 \times 10^{-3}$	Unités lentes en direct	Nb d'accès
$g = 8,5 \times 10^{-3}$	Unités lentes (JES II)	Nb cartes x NB lignes imprimées
$h = 10$	Initialisation d'un STEP	Nb STEPS

GÉNÉRALITÉS - FORMULE DE VALORISATION
DES RESSOURCES CONSOMMÉES

FORMULE DE VALORISATION

Nombre d'U.C. = $\left[\sum \text{STEP } Ci\ Ri\right]$ + 10 U.C. par JOB

REMARQUES

(1) Le temps CPU de référence est relatif à l'utilisation d'un ordinateur 370 modèles 158 exploité sous système SVS.

Une pondération (P) est appliquées à la ressource CPU selon les différent cas suivants :

SYSTEME / MACHINE	S V S	M V S
1 5 8	1	0,8
1 6 8	2,5	2

Cette pondération est calculée en tenant compte des différences de puissance des ordinateurs mis en oeuvre, d'une part, des différences de mesure du temps CPU au niveau de routines comptables propres à chaque système, d'autre part.

(2) - Mémoire utilisée si le travail est effectué en mémoire virtuelle.

- Mémoire demandée, affectée d'un coefficient 3, si le travail est exécuté en mémoire réelle.

(3) Calcul du temps théorique :

TEMPS THEORIQUE = P.Tcpu + (Nbre d'accès disques) x (Temps unitaire moyen d'accès sur disques)

+ (Nbre d'accès bandes) x (temps unitaire moyen d'accès sur bande)

+ (Nbre d'accès unités lentes en direct) x (Temps unitai moyen d'accès aux unités lentes).

P représente le coefficient de pondération mentionné en (1).

- Temps unitaire moyen d'accès disques = (30×10^{-3}) secondes

- Temps unitaire moyen d'accès bandes = (20×10^{-3}) secondes

- Temps unitaire moyen d'accès unités lentes = (65×10^{-3}) secondes

III - CLASSES DE SERVICE - MAJORATIONS

La valeur de l'U.C. précitée (§ II) correspond à l'utilisation des ressources ordinateur en horaire de 19h à 8h.

Des niveaux de service supérieurs, fonction :

- de l'heure de passage,
- du délai de soumission,
- des unités périphériques requises,
- de la taille mémoire (exprimée en mémoire virtuelle),

pourront être fournis avec application des coefficients de majoration ci-après.

1. CLASSE B

- Utilisable pendant le poste de jour : 8 à 19 h du lundi au samedi.

- Début du travail dans l'heure suivant sa soumission.

- Temps CPU maximum autorisé : 1 minute/P

- Travail sans disques autres que banalisés.

- Travail sans bandes.

- Mémoire disponible $\leq$256 K en SVS
  $\leq$320 K en MVS

TARIF STANDARD + 10 %

2. CLASSE C

- Idem Classe B, sauf :
- CPU, maximum autorisé : 2 minutes/P
- Maximum 1 x 3336 modèle 1 ou 1 x 3336 modèles 11 autorisé en privé.
- Maximum autorisé en utilisation simultanée : 4 bandes
- Mémoire disponible 1.024 K.

TARIF STANDARD + 30 %

3. CLASSE D

- Utilisable pendant le poste de jour.
- Début de travail dans les 4 heures suivant sa soumission
- Temps CPU maximum autorisé : 8 minutes/P
- Maximum de disques autorisés en privé : 2 x 3336 modèle 1
  ou 2 x 3336 modèle 11
- Maximum autorisé en utilisation simultanée : 5 bandes
- Mémoire disponible 1.024 K.

TARIF STANDARD + 10 %

4. CLASSE E

Utilisable pour les travaux dont l'exécution est demandée de nuit de 19h 00 à 8 h 00 du lundi au samedi matin.

Notification doit être faite à ALLIANCE INFORMATIQUE pour une charge globale de ces travaux dépassant 3 heures par nuit.

TARIF STANDARD : sans majoration.

5. CLASSE F

Le centre de traitement n'assure pas de service du samedi 19 h au lundi 8 h, sauf demande expresse formulée par le Client au plus tard 4 jours ouvrables auparavant.

TARIF STANDARD : + 2.000 F H.T. de frais fixes forfaitaires.

L'ouverture du centre doit être soumise à l'accord du Fournisseur.

IV - MAJORATIONS AUTOMATIQUES POUR DÉPASSEMENT DE RESSOURCES, DÉCLASSEMENT

1. Tout job, demandé dans une classe de service, et dont l'exécution entraînera le dépassement des limites de ressources fixées, sera automatiquement affecté à la classe de niveau supérieur :

- Classe B ou Classe D	Surclassées en C
- Classe C	Surclassées en classe spéciale soit TARIF STANDARD + 50 %
- Classe E ou Classe F	Pas de surclassement automatique.

2. Inversement, tout job demandé dans une classe de service, et dont le niveau de service requis (délai d'initialisation) n'est pas satisfait, sera automatiquement affecté à la classe de niveau inférieur (déclassemen

- Classe spéciale	Classe C
- Classe C	Classe D
- Classe B ou Classe D	Classe E

REMARQUE : En cas de simultanéité, les deux exceptions ci-dessus annulent leurs effets.

V - MAJORATION POUR ÉDITION DE LIGNES OU PERFORATION DE CARTES SUPÉRIEURES À 10.000 UNITÉS PAR JOB

26 U.C par 1.000 lignes ou cartes au-delà de 10.000.

N.B. - Les éditions importantes peuvent être obtenues en "Edition différée".

VI - ÉDITIONS DIFFÉRÉES

8.00 F H.T. le 1.000 de lignes.

VII - MINIMUM DE FACTURATION PAR JOB

100 U.C

VIII - UTILISATION EN MODE REMOTE BATCH

- Frais mensuels de connexion : 900 F H.T
- Location de modem : Selon modèle
- Ressources ordinateur consommées : facturées selon les principes du mode local, comme définis ci-dessus sauf:

  o Minimum de facturation par job : 50 U.C.

- La clause de majoration du paragraphe V n'est pas applicable aux JOBS exécutés en mode REMOTE BATCH.

IX - DISQUES RÉSIDENTS PERMANENTS

Par unité de disque complète (tous modèles 3330) :

- 8 h à 19 h : 4.340 F H.T. par mois d'immobilisation du lundi au samedi inclus.
- 0 h à 24 h : 6.510 F H.T. par mois d'immobilisation du lundi au samedi inclus.

Par cylindre (volume partagé).

- Frais mensuels : 217 F H.T.
- Frais additionnels : 10,85 F H.T. par cylindre et par mois.

Les cylindres sont alloués sur réservation préalable, par mois complet.

APPENDIX : TARIFFS

B. ARTEMIS

- PRICING

  Pricing for the benchwork jobs is included in this Appendix.

- VOLUME DISCOUNTS

  Specific discount information not given, but there are three levels of discount as the maximum level is 20%.

APPENDIX : TARIFFS

B. ARTEMIS

- PRICING

  Pricing for the benchwork jobs is included in this Appendix.

- VOLUME DISCOUNTS

  Specific discount information not given, but there are three levels of discount as the maximum level is 20%.

Le 28 Février 1979

ESSAIS EFFECTUES POUR LE COMPTE DE Mr. CHAPPEL

	Coût fixe	Terminal ARTEMIS	Terminal Client	Tarif jour	Tarif nuit 20ʰ à 8ʰ
Job n° 22					
Prise en charge $\frac{(2\,950 \times 4)}{1000}$	11,8				
Cartes lues (51 x 0,00944)		0,48	0		
Impression (1 326 x 0,0109)		14,45	0		
T.T.J. (0,17896 x 2.950)				527,93	263,95
Job n° 24					
Prise en charge $\frac{(2\,950 \times 4)}{1000}$	11,8				
Cartes lues (26 x 0,00944)		0,24	0		
Impression (4 632 x 0,0109)		50,48	0		
T.T.J. (0,09775 x 2950)				288,36	144,18
Job n° 27					
Prise en charge $\frac{(2\,950 \times 4)}{1000}$	11,8				
Cartes lues (69 x 0,00944		0,65	0		
Impression (4 204 x 0,0109)		45,82	0		
T.T.J.(0,21373 x 2.950)				630,50	315,25

Note : coût donné en Francs H.T.

ARTEMIS S.A.
4 Place R. Dautry
75015 - PARIS

TARIF GENERAL DES PRESTATIONS H.T.
AU 1ER JUILLET 1978

en vigueur au 1 Mars 1979

A - Utilisation des moyens de traitement et assistance technique nécessaire.

Les travaux passés sur l'IBM 370/158 sont facturés au prix horaire de 2 950 F.

Le calcul du temps facturable est effectué selon les indications de la note "Tarification des passages sous OS-VS2".

B - Stockage des informations.

1/ sur disque permanent :

- fichier par piste et par mois :	
. sur 2314 (7294 caractères)........................	1,75 F
. sur 3330 (13030 caractères)........................	2,95 F
- par programme ou sous-programme, par mois............	12,37 F

2/ sur volume privé, fourniture du support :

- par disque et par mois :	
. pour 2314	100,00 F
. pour 3330	200,00 F
- bande magnétique 2400 ft	100,00 F

C - Perforation - vérification :

- prix fixe par carte..................................	0,16 F
- par caractère alpha..................................	0,0080 F
- par caractère numérique..............................	0,0069 F

Perforation seule : abattement de 40 %.

...

D - Travaux de finition des impressions :

- déliassage et massicot, par heure .... 55,00 F

E - Utilisation du système ROSCOE :

Calcul du temps facturable en fonction de la durée des vacations et application du tarif horaire normal.

- le stockage des fichiers ROSCOE est facturé au prix de.. 0,0142 F

  par ligne et par mois sur la base du volume maximum atteint le mois considéré.

- 5) ~~[illegible]~~FHT Connect + CPU inclusive

F - Lecture optique de documents :

(forme libre comportant au minimum 30 lignes par page).

Prestation	N = Nombre de lignes par exploitation			
	N< 5.000	5.000<N<10.000	10.000<N<20.000	N>20.
Lecture (sans correction)	546 F	N ×0,098 F	N ×0,087 F	N × 0,0
Contrôle et mise en forme par programme généralisé	109 F	N × 0,0272 F		

Les fournitures sont facturées en sus.

G - Tous les travaux non prévus dans les catégories ci-dessus seront exécutés après accord préalable et facturés en fonction de conditions particulières.

Janvier 1978

TARIFICATION DES TRAVAUX SOUS OS-VS2

I. CALCUL DU TEMPS DE BASE (à chaque étape)

TB = KM x temps CPU + temps E/S

. KM = coefficient fonction de la vitesse d'exécution de l'unité centrale :

KM = 1 pour le 370/145 modèle 2 ;

KM = 3 pour le 370/158 modèle 3 ;

. temps CPU = temps d'utilisation réel de l'unité centrale de traitement ;

. temps E/S = temps obtenu par la somme des produits pour chaque type d'unité d'entrée-sortie :

nombre entrée-sortie x temps moyen ;

. Valeurs retenues pour les temps moyens :

- unité virtuelle.......................... 10 ms
  (lecteur de cartes, imprimante ou perforateur de cartes)
- bande magnétique......................... 20 ms
- disque magnétique........................ 30 ms
- autres unités............................ 255 ms

Le temps de base est soumis à un minimum égal à un millième d'heure.

Cas particulier des tris.

Les entrées-sorties sur disque effectuées sur les fichi
de travail du programme de tri sont valorisées à 20 ms.

Indications portées sur les listes.

A chaque fin d'étape est indiqué le temps CPU et les temps d'entrée-sortie par type d'unité (UV = unités virtuelles, DM = disques magnétiques, BM = bandes magnétiques, UR = autres unités).

II. CALCUL DU TEMPS SYSTEME (à chaque étape).

$$TTS = TB \left(1 + \frac{K}{1000} + \frac{30 \times N1}{1000} + \frac{50 \times N2}{1000} + \frac{60 \times N3}{1000}\right)$$

. Détermination de K

T = taille mémoire maximum en K	0 à 256	257 à 512	513 à 1024	1025 à 2
K	T 2xT (si V=R)	1,25 x T	1,5 x T	2 x T

. Détermination de N1, N2, N3

Nombre d'unités utilisées *		0	1	2	3	4	5	6
2314	N1 =	0	1	2	3	6	10	X
3330	N2 =	0	1	2	3	10	X	X
3420	N3 =	0	1	2	3	5	7	10

* les unités SYSWK ne sont pas comptabilisées

Indication portée sur les listes.

L'indication TTS à chaque fin d'étape est indiquée en heure.

III. CALCUL DU TEMPS TOTAL POUR UN TRAVAIL (exprimé en millièmes d'heure).

$$TTJ = \Sigma TS + 3{,}5 \times NB + 14 \times ND1 + 14 \times ND2$$

NB = nombre de montage de bande ;
ND1 = nombre de montage de disque privé 2314 ;
ND2 = nombre de montage de disque privé 3330.

Indication portée sur les listes.

L'indication TTJ à chaque fin de travail est indiquée en heure.

IV. CALCUL DU PRIX DE BASE

$$PB = TTJ \times Ko \times T \times \frac{\text{prix horaire}}{1\ 000}$$

. Détermination de T

Urgence du travail	Code	T
Travail urgent	U	2
Travail normal	*	1
Travail non urgent	N	0,5

. Détermination de Ko

- du rapport R du temps E/S sur le temps CPU

$$R = \frac{\text{temps E/S}}{\text{KM} \times \text{temps CPU}}$$

- de la valeur du temps total (exprimé en millièmes d'heure).

R \ TTJ	<100	<200	<400	<800	<1.600	>1.600
≤ 1	1,00	1,00	1,00	1,00	1,00	1,00
< 2	1,00	0,99	0,98	0,97	0,96	0,95
< 3	1,00	0,98	0,96	0,94	0,92	0,90
< 4	1,00	0,97	0,94	0,91	0,88	0,85
< 5	1,00	0,96	0,92	0,88	0,84	0,80
< 6	1,00	0,95	0,90	0,85	0,80	0,75
< 7	1,00	0,94	0,88	0,82	0,76	0,70
< 8	1,00	0,93	0,86	0,79	0,72	0,65
< 9	1,00	0,92	0,84	0,76	0,68	0,60
> 9	1,00	0,91	0,82	0,73	0,64	0,55

V. CALCUL DU TEMPS PRODUIT-PROGRAMME (exprimé en millièmes d'heure)

. Un certain nombre de programmes donnent lieu à redevance d'utilisation calculée en équivalence de temps par la formule suivante pour chaque exécution :

$$\text{TPGM} = A + B \times \text{KM} \times \text{temps CPU}$$

Temps CPU exprimé en secondes.

. Dans certains cas particuliers la redevance est proportionnelle au prix de base PB du travail, soit :

$$\text{TPGM} = C \times \text{PB} \times \frac{1\ 000}{\text{prix horaire}}$$

Les valeurs des coefficients A, B ou C sont données dans une annexe spéciale sur les produits-programmes.

VI. CALCUL DU TEMPS PERIFPHERIQUE (exprimé en millièmes d'heure)

TES = $4 \times K1 + 3{,}2 \times NC \times K2 + 3{,}7 \times NL \times K3 + 20 \times NP \times K4$

NC = nombre de cartes lues (en milliers)

NL = nombre de lignes imprimées (en milliers)

NP = nombre de cartes perforées (en milliers).

. Détermination de K1, K2, K3, K4

	K1	K2 - K3 - K4
Cas du site central ou d'un terminal ARTEMIS	1	1
Cas d'un terminal client	1	0
Cas d'un terminal installé par ARTEMIS chez un client	Selon conditions particulières.	

. Détermination de K3 dans le cas de grosses impressions effectuées sur le site central :

- au dessus de 10 000 lignes K3 = 0,90
- au dessus de 20 000 lignes K3 = 0,81
- au dessus de 30 000 lignes K3 = 0,73
- au dessus de 50 000 lignes K3 = 0,66
- au dessus de 100 000 lignes K3 = 0,60
- au dessus de 200 000 lignes K3 = 0,54

VII. CALCUL DU TEMPS DE PREPARATION (exprimé en millièmes d'heure)

Lorsque la préparation du passage ordinateur est faite par le personnel d'ARTEMIS un temps supplémentaire est déterminé par les règles suivantes :

- si $TTJ<41$ $TP = 2$
- si $40<TTJ<2001$ $TP = TTJ \times 0,05$
- si $TTJ\ 2>000$ $TP = 100 + (TTJ - 2\ 000) \times 0,02$

Les valeurs ci-dessus sont doublées si la préparation est comp et comporte un contrôle des résultats.

VIII. CALCUL DU TEMPS TOTAL FACTURABLE (exprimé en millièmes d'heure

$$TF = TTJ + TPGM + TES + TP$$

IX. CALCUL DU PRIX TOTAL

$$PRIX = PB + (TPGM + TES + TP) \times \frac{\text{Prix horaire}}{1\ 000}$$

X. FACTURATION DES VACATIONS ROSCOE.

. Calcul du temps facturable (exprimé en millièmes d'heure).

DV = durée de la vacation en heure

CPU = Temps d'utilisation de l'unité centrale en secondes.

$$T\ F = 20 \times DV$$

au delà de 10 secondes de temps CPU (référence 370/158) par he de vacation, le temps supplémentaire sera comptabilisé et la f mule devient :

$$TF = 20 \times DV + KM \times (CPU - 10 \times DV)/3,6$$

. Calcul du prix :

$$PRIX = TF \times \frac{\text{Prix horaire}}{1\ 000}$$

XI. FORMULES APPLICABLES AUX TRAVAUX SCIENTIFIQUES.

Calcul du temps système.

$$TTS = TB \times \left(1 + CK \times \frac{(TM - 256)}{1024} + \frac{30 \times N1}{1000} + \frac{50 \times N2}{1000} + \frac{60 \times N3}{1000}\right)$$

. TM - taille mémoire maximum utilisée en 1024 octets

. $CK = 0$ si $TM<257$

. $CK = 0{,}25$ si $256<TM<513$

. $CK = 0{,}50$ si $512<TM<1025$

. $CK = 0{,}75$ si $1024<TM<2049$

. $CK = 1$ si $TM>2048$

. TB, N1, N2, N3 sont déterminés comme dans le cas général.

Calcul du prix de base

PB = prix horaire × TTJ × T

. T est déterminé comme dans le cas général.

Toutes les autres formules sont applicables sans modifications.

XI. FACTURATION DES VACATIONS APL

. Calcul du temps facturable (exprimé en millièmes d'heure) :

DV = durée de la vacation en heure

CPU = temps utilisation de l'unité centrale en secondes

ESD = nombre E/S sur disque

ESB = nombre E/S sur bande

ESV = nombre E/S sur unité virtuelle (lecteur carte, imprimant

$$TF = 20 \times DV + (\frac{2,5 \times CPU + 0,030 \times ESD + 0,020 \times ESB + 0,010 \times E}{3,6}$$

. Calcul du prix :

$$PRX = TF \times \frac{\text{Prix horaire}}{1\ 000}$$

. Minimum mensuel par terminal connecté 1.250 F.

APPENDIX : TARIFFS

C. CDC - CYBERNET SERVICES

- TARIFFS

  The tariff included for batch processing is for the Cyber 74. No services are supplied from Brussels on the Cyber 175.

- VOLUME DISCOUNT

  Volume discount can be given, but no information was available.

APPENDIX : TARIFFS

C. CDC - CYBERNET SERVICES

- TARIFFS

  The tariff included for batch processing is for the Cyber 74. No services are supplied from Brussels on the Cyber 175.

- VOLUME DISCOUNT

  Volume discount can be given, but no information was available.

CONTROL DATA

CYBERNET® SERVICES

DIRECTION, SERVICES COMMERCIAUX, ASSISTANCE TECHNIQUE : TOUR GAMMA A · 195, RUE DE BERCY · 75582 PARIS CEDEX 12 – TEL. 345.50.45 & 345.60.35 · TELEX 670110
CENTRE DE CALCUL : RUNGIS - ZONE SILIC - 53-61 RUE D'ARCUEIL – 94533 RUNGIS PRINCIPAL - TEL. 687.22.18 – ASSISTANCE "LIGNE ROUGE" : TEL. 686.23.22
S.A. AU CAPITAL DE F 50.100.000 - NUMERO : 642-007-314 - BRC PARIS

TARIFS
AU 1er JUILLET 1978

Prix indiqués hors taxes, prévoir l'incidence du taux légal de la TVA

Les prestations non prévues à ce tarif seront proposées suivant devis particulier

Ce tarif est révisable moyennant 30 jours de préavis

1 - SERVICE TRAITEMENT PAR LOTS SCOPE

11. RESSOURCES DU CALCULATEUR CENTRAL

— Utilisation mesurée en SBU (System Billing Unit) dont le nombre est indiqué à la fin de chaque travail.

— Aux différents niveaux de service, est associée une garantie du temps maximum de restitution.

Temps maximum de restitution = temps garanti du niveau de service choisi + ET.

ET (execution time) est calculé pour chaque travail et correspond au temps d'occupation de la machine par ce seul travail.

Si ce temps maximum n'était pas respecté, le coût de niveau de service réel lui serait appliqué.

Service	Super express	Express	Standard	Différé	Economique
Priorité	5	4	3	2	1
Prix SBU Francs	1,57	1,324	1,087	0,826	0,523
Temps de restitution	1/2 h + ET	2 h + ET	6 h + ET	24 h	non garanti

Les travaux soumis en Service Economique sont effectués au plus tard le week-end suivant leur soumission.

La garantie de temps de restitution cesse dans le cas de travaux enchaînés (Job Dependancy) ou demandant une taille mémoire supérieure à 270.000 B.

— Horaires d'ouverture des centres :

	Centre de Rungis et Terminaux privés		Terminaux publics	
Lundi	10 h 30	22 h	10 h 30	20 h
Mardi à Vendredi	8 h 30	22 h	8 h 30	20 h

— Assistance technique : 8 h 45 à 18 h.

12. ENTREES SORTIES CARTES OU IMPRESSION

— Mesurées en SDB (Standard Data Block) de 1 280 caractères.
— Cartes lues et impression : 0,25 par SDB.
— Cartes perforées : 0,512 par SDB.

13. DIVERS

— Bandes magnétiques :
Montage : 5,65 F par bande montée.
Location et archivage : 1,12 F par jour.
Archivage bande client : 0,56 F par jour.

— Imprimés spéciaux ou plus d'un exemplaire (fourniture à la charge du client).
Par changement d'imprimé :
Sur un terminal public : 22,25 F.
Au centre de calcul : 44,55 F.
— Traceur de courbes : 395,70 F l'heure plus fournitures.

14. FICHIERS PERMANENTS EN LIGNE

— Mesurés en SDB (Standard Data Block) de 1.280 caractères de 6 bits.

— Prix par jour et par fichier :

Volume en SDB	Prix en Francs
0-1 000	0,0494 par SDB
1 001-5 000	49,40 F plus 0,0453 F par SDB au-dessus de 1 000
Plus de 5 000	230,70 F plus 0,0412 F par SDB au-dessus de 5 000

15. CONNEXION D'UN TERMINAL PRIVE

— Coût de connexion réseau commuté ou caducée : 0,89 F la minute de connexion.

— Coût de connexion par ligne privée :
Option A - 1,36 F la minute de connexion.
Option B - 5 305 F par mois moins 10 % du montant calcul à concurrence de 5.305 F.

— Prévoir les frais de location et maintenance du terminal, modem et location de ligne aux P. et T.

16. UTILISATION DE LA BIBLIOTHEQUE PRIVEE

Certains programmes sont utilisables moyennant une redevance additionnelle. Les ressources correspondantes sont indiquées à la fin de chaque travail.

17. MISE A DISPOSITION DU SYSTEME ENTIER

Après réservation et accord du centre (nuit et week-end), temps horloge mesuré entre l'entrée et le départ de la salle.

Minimum de vacation : une heure.

La minute horloge : 136 F pour CYBER 74.

10 Caract = 1 word = 60 bits

2 - SERVICE TEMPS PARTAGE NOS

21. RESSOURCES DU CALCULATEUR CENTRAL

— Utilisation mesurée en SBU (SYSTEME BILLING UNIT) ou en ARU (APPLICATION RESOURCE UNIT).

— Mode interactif : 2,292 F par SBU.

Mode différé P 4 (jour) : 2,1 F par SBU.

Mode différé P 2 (nuit) : 1,37 F par SBU.

— Le nombre de SBU ou d'ARU est indiqué à la fin de chaque travail.

— Disponibilité du service :
Du lundi au vendredi de 8 h à 21 h.

— Assistance technique : 8 h 45 à 18 h.

22. ENTREES SORTIES CARTES OU IMPRESSIONS

Mesurées en SDB (Standard Data Block) de 1 280 caractères : 0,365 F par SDB.

23. DIVERS

Montage de banque magnétique : 15,81 F.

Archivage de bandes magnétiques par jour :
— location et archivage : 1,122 F.
— archivage bande appartenant au client : 0,566 F.

24. FICHIERS PERMANENTS EN LIGNE

— Mesurés en SDB (Standard Data Block) de 1.280 caractères de 6 bits.

Prix par jour et par utilisateur :

Volume en SDB	Prix en Francs H.T.
1-100	0,1133 F par SDB
101-1 000	11,33 F plus 0,1009 F par SDB au-dessus de 100
1 001-5 000	102,18 F plus 0,0844 F par SDB au-dessus de 1 000
au-dessus de 5.000	440,01 F plus 0,0588 F par SDB au-dessus de 5 000

25. CONNEXION D'UN TERMINAL

Les terminaux sont connectés par le réseau autocommuté.
— 15 caractères par seconde : 57 F l'heure de connexion.
→ — 30 caractères par seconde : 80 F l'heure de connexion.

26. CYBERLINK

— Transfert entre une machine SCOPE et une machine NOS.
— Mesuré en SDB (Standard Data Block) de 1.280 caractères de 6 bits.

— 0,057 F par SDB

27. MINIMUM MENSUEL SUR L'ENSEMBLE DES POSTES :

Temps de connexion, ressources du calculateur central, fichiers permanents en ligne :
Montant : 900 F.

3 - SERVICE TEMPS PARTAGE CDC - CALL

31. TARIF

a) Temps de connexion
— 15 caractères par seconde : 57 F l'heure.
— 30 caractères par seconde : 80 F l'heure.

b) Temps unité centrale
Mode interactif : 1,379 F l'unité.
Mode différé jour : 1,076 F l'unité.
Mode différé nuit : 0,518 F l'unité.

c) Stockage
Stockage interactif : 0,37 F par bloc et par jour.
Stockage référence : 0,34 F par bloc et par jour.

d) Minimum mensuel: 900 F.

32. ACCES

Le service CDC-CALL est disponible tous les jours (y compris le dimanche) pendant 20 heures par jour.

33. MODES DE SOUMISSION DES TRAVAUX

a) Mode interactif : L'exécution des travaux est immédiate.

b) Mode différé de jour : Les travaux seront exécutés au plus tôt 30 minutes après la soumission et au plus tard avant les travaux soumis sous mode différé de nuit.

c) Mode différé de nuit : Les travaux seront exécutés de nuit et au plus tard avant l'heure d'ouverture du jour suivant.

Le client fait son affaire d'adapter ses programmes et ses ordres de commandes suivant les spécifications du système.

34. MODE DE STOCKAGE

a) Mode interactif : Le client peut lire et écrire sur le fichier.

b) Mode de référence : Le client peut lire le fichier mais ne peut y écrire.

35. BIBLIOTHEQUE DE PROGRAMMES

a) Les programmes préfixés * ou **** sont accessibles à tous les abonnés CDC-CALL, leur utilisation est gratuite.

b) Les programmes préfixés * sont accessibles aux clients ayant le même numéro de code (4 chiffres), leur utilisation est gratuite.

c) Les programmes préfixés // sont accessibles à tous les abonnés CDC-CALL, leur utilisation est soumise à une surcharge. La lite de ces programmes et de leur surcharge peut être obtenue par la commande RUN // PRICE.

36. SERVICE DU CENTRE DE CALCUL

Certains travaux non interactifs peuvent être exécutés au CENTRE de CLEVELAND. Des services feront l'objet d'une proposition complémentaire par CONTROL DATA.

37. DEFINITION DES UNITES

a) Temps de connexion

Temps écoulé entre l'identification de l'abonné et sa déconnexion. Est mesuré par l'horloge du système. En fin de mois, le cumul est établi, arrondi au 1/10 d'heure, par vitesse de transmission (15 cps et 30 cps), par n° de compte et de sous-compte.

b) Temps unité centrale
Mesuré par l'horloge du système en unité égale à 0,242 secondes de travail de l'unité centrale d'un 370/155. En fin de mois, le cumul est établi, arrondi à l'unité, par mode d'utilisation (interactif, différé de jour et différé de nuit), par n° de compte et de sous-compte.

c) Stockage
Un bloc de stockage est égal à 3 440 caractères. Le stockage dans chaque mode (interactif et référence) est comptabilisé journellement au nombre maximum de blocs atteint en stockage dans la journée.

d) Minimum mensuel
Un montant minimum est facturé par abonné et par mois civil, il couvre l'ensemble des postes : temps de connexion, temps unité centrale et stockage.

APPENDIX : TARIFFS

D. CISI

- TARIFFS & PRICES

The variables used in the furmulae for CDC cannot be related to the variable names on the printed results after job execution.

The IBM costs supplied by CISI appear to ignore tape handling costs.

APPENDIX : TARIFFS

D. CISI

- TARIFFS & PRICES

The variables used in the furmulae for CDC cannot be related to the variable names on the printed results after job execution.

The IBM costs supplied by CISI appear to ignore tape handling costs.

ANNEXE B3

TARIFS DE TRAITEMENT BATCH ET REMOTE-BATCH

en Francs HT

B 3.1 Calculs

	Express	Standard	Nuit
Unité de compte 360-91	4.48	3.35	2.68
Unité de compte 370-168	4.01	2.99	2.40
Unité de compte 370-158-AP	1.49	1.11	0.89
Unité de compte 7600	14.98	11.18	8.94
Unité de compte CYBER-173-CYBER 171	3.80	2.83	2.26
Unité de compte IRIS 55	-	0.578	-

B 3.2 Périphériques

Lecture de cartes	la carte lue	0.0148
Perforation de cartes	la carte perforée	0.0662
Impression de lignes (1)	la ligne L2	0.0148
Transmission de caractères vers ou depuis un terminal d'agence CISI (2)	le Kilocaractère K2	0.225
Transmission de caractères vers ou depuis un terminal privé (2)	le Kilocaractère K2	0.0662
Lecture de ruban perforé	équivalent carte	0.0148
Perforation de ruban -	équivalent carte	0.0662

---

(1) Si L1 est le nombre de lignes imprimées par un travail sur un site, le nombre L2 de lignes facturées est :

$$L2 = L1 \qquad \text{si } L1 \leqslant 5000$$
$$L2 = 5000 + \frac{2}{3}(L1-5000) \qquad \text{si } 5000 < L1 \leqslant 10000$$
$$L2 = 8333 + \frac{1}{3}(L1-10000) \qquad \text{si } L1 > 10000$$

(2) Si K1 est le nombre de Kilocaractères transmis par un travail à un terminal, le nombre K2 de Kilocaractères facturés est :

$$K2 = K1 \qquad \text{si } K1 \leqslant 1000$$
$$K2 = 1000 + \frac{2}{3}(K1-1000) \qquad \text{si } 1000 < K1 \leqslant 2000$$
$$K2 = 1667 + \frac{1}{3}(K1-2000) \qquad \text{si } K1 > 2000$$

Date de validité : 1.1.79
Date d'édition : 15.12.78

ANNEXE B 2.2

FACTURATION DU CALCUL SUR IBM 370/168

1. ELEMENTS PRIS EN COMPTE DANS LA FACTURATION DU CALCUL D'UN TRAVAIL

- Pour chaque étape

T_{CP}	temps d'utilisation de l'unité centrale (s)
T_{IO}	temps d'entrées-sorties (s)
M	taille mémoire virtuelle allouée (K octets)
D	nombre d'unités de disque

- Pour l'ensemble du travail

N_B	nombre de montages de bandes
N_D	nombre de montages de disques

2. COUT DU CALCUL D'UN TRAVAIL

Le coût du calcul d'un travail s'exprime par la formule

$$C = P.\mathrm{Max}\ (T_f\ ,\ M_f)$$

P prix de l'unité de compte

$$\mathrm{Max}\ (T_f, M_f) = \begin{cases} T_f & \text{si } T_f > M_f \\ M_f & \text{si } T_f < M_f \end{cases}$$

$$T_f = \sum_{\text{étapes}} \left[1.045\ a\ T_{CP} + b\ T_{IO} + c D' \left(T_{cp} + T_{IO} \right) \right] + d\ N_B$$

avec :

- pour	$M \leqslant 100$	$a = 3{,}5$
	$100 < M \leqslant 500$	$a = 3{,}5 + 0{,}7\ (M-100)\ /\ 400$
	$500 < M \leqslant 1000$	$a = 4{,}2 + 2{,}1\ (M-500)\ /\ 500$
	$1000 < M$	$a = 6{,}3 + 11{,}2\ (M-1000)/1500$

- $b = 0{,}055\ a$
- $c = 0{,}05$
- $d = 14$

et : $D' = 0$ si $D = 0$

$D' = 3D-2$ si $D \geqslant 1$

M_f nombre minimum d'unités de compte

$$M_f = 5 + 10\ N_B + 40\ N_D$$

Date de validité : 1.1.79
Date d'édition : 15.12.78

ANNEXE B2.4

FACTURATION DU CALCUL SUR CDC 7600

1. ELEMENTS PRIS EN COMPTE DANS LA FACTURATION DU CALCUL D'UN TRAVAIL

T_{CP}	temps d'utilisation de l'unité centrale (s)
T_{IO}	temps d'entrées-sorties (s)
M	taille mémoire (K mots)
N_b	nombre de montages de bandes
N_{km}	nombre de k mots échangés entre la station frontale et l disque 7638 (cas de "staging").

2. COUT DU CALCUL D'UN TRAVAIL

Le coût du calcul d'un travail s'exprime par la formule

$$C = PT_f$$

P	prix de l'unité de compte
T_f	nombre d'unités de compte

$$T_f = (1{,}2 + 0{,}0015\ M)\ T_{CP} + 0{,}0025\ M.\ T_{IO} + 3{,}9 N_b + 0{,}004\ N_{km}$$

avec :

$M = M_1 + M_2 + M_3$

M_1 = taille mémoire demandée en LCM

M_2 = taille des buffers alloués en LCM

M_3 = 1,2 x (taille mémoire demandée en SCM)

Date de validité : 1.1.79
Date d'édition : 1.12 78

ANNEXE C 2

TRAITEMENT CONVERSATIONNEL NOS

I. Principes

I.1 L'utilisation du système NOS s'effectue en mode conversati nel à partir de terminaux, les liaisons se faisant par le réseau téléphonique PTT commuté.

I.2 Tout travail comporte

- des temps de session exprimés en heures T_S
- des traitements exprimés en unités de compte U_C

I.3 Le coût de stockage est donné par l'annexe D.

I.4 Le client peut, s'il le désire, soumettre des travaux au traitement par lots. Ces travaux quittent alors NOS/TS et facturés au tarif en vigueur pour la machine sur laquelle s'exécutera le travail.

II. Tarifs HT

II.1	Prix de l'unité de compte U_C	2.83 F
II.2	Prix de l'heure de session U_S	78,69 F

Ce prix incorpore la taxe P et T.

III. Redevance minimale

La redevance minimale relative au service NOS est de **16**.500 F HT année calendaire. Si le contrat prend effet en cours d'année, cette redevance minimale sera calculée "prorata temporis".

Si le client a souscrit un contrat de service conversationnel (APL, TSO, NOS auprès de la CISI, la redevance minimale annuelle est unique pour l'ensemble des contrats conversationnels.

Date de validité 1/1/79
Date d'édition 1/12/78

APPENDIX : TARIFFS

E. COGID

- TARIFF

The basic tariff applies as one standard for any service during a 24 hour period. There are no variations for service priority.

- VOLUME DISCOUNTS

There are three levels of discount with a new tariff being introduced for the 303X series machines to be introduced.

Tarif	Expenditure Range FHT per month			Discount Approx %
T1	01	to	109000 FHT	-
T2	10,000	to	50,000 FHT	20
T3	50,001	to	100,000	35
T33	Minimum		100,000	Unknown

- The actual discount applicable is different for each of the variables CPU, Memory retention, Disk I/O as Tape I/O.

Tarif T3 Rates [illegible]

I	Rate FHT	[illegible]
[illegible]	5.66	[illegible]
[illegible]	15	[illegible]

APPENDIX : TARIFFS

E. COGID

- **TARIFF**

  The basic tariff applies as one standard for any service during a 24 hour period. There are no variations for service priority.

- **VOLUME DISCOUNTS**

  There are three levels of discount with a new tariff being introduced for the 303X series machines to be introduced.

Tarif	Expenditure Range FHT per month			Discount Approx %
T1	01	to	109000 FHT	-
T2	10,000	to	50,000 FHT	20
T3	50,001	to	100,000	35
T33	Minimum		100,000	Unknown

- The actual discount applicable is different for each of the variables CPU, Memory retention, Disk I/O as Tape I/O.

T2 T3 Rates [illegible]

[illegible] Rate FHT [illegible]

[illegible]

APPENDIX : TARIFFS

F. CSS FRANCE

APPENDIX : TARIFFS

F. CSS FRANCE

C S S France
Computers...Systèmes...Solutions
30, rue Notre-Dame-des-Victoires
75002 PARIS
Tél. : (1) 261.56.35

CLIENT :

ANNEXE A-2 AU CONTRAT N°

STOCKAGE SUR DISQUES 3330

Connexion MINIDISQUES montables (ON-LINE)

24MC	200 cylindres	F	270,00	par heure *
	300 cylindres	F	315,00	par heure *
	400 cylindres	F	360,00	par heure *

700

* 0,3 heure minimum (18mn)

MINIDISQUES montables (OFF-LINE)

200 cylindres	F	270,00	par mois
300 cylindres	F	400,00	par mois
400 cylindres	F	540,00	par mois

MINIDISQUES en ligne (ON-LINE ALL THE TIME)

200 cylindres	F	19 950,00	par mois
au-delà de 200 cylindres, par cylindre	F	60,00	par mois

C S S FRANCE
30 RUE NOTRE DAME DES VICTOIRES
75002 PARIS
Tél. : (1) 261.56 35

CLIENT :

ANNEXE A - au contrat n°

(Tous prix indiqués hors taxe)

A. TEMPS PARTAGE *(Time Sharing)*

			FRANCS
Temps de connexion			
• mémoire de 256 K octets :	terminal 10 car/sec (110 bauds ASCII)	par heure	55,00
	terminal 14,8 car/sec (134,5 bauds EBCDIC)	« «	55,00
	terminal 30 car/sec (300 bauds ASCII)	« «	75,00
• mémoire virtuelle supplémentaire :	par bloc de 64 K octets [illegible]	« «	7,50
Temps de calcul par unité de traitement :			
	ARU (Application Re~~s~~source Unit)		1,50

B. TRAITEMENT DIFFERE *(Remote Batch)*

Traitement		temps de réponse	PRIORITE 1 12 h	PRIORITE 2 24 h
. temps de connexion : non facturé				
. temps de calcul	ARU	réduction sur tarif ci-dessus § A	40 %	60 %

Utilisation du terminal lourd installé dans les locaux de CSS France		
• lecture de cartes	: pour 1.000 cartes	35,00
• perforation de cartes	: pour 1.000 cartes	50,00
• impression	: pour 1.000 lignes	25,00
Connexion d'un terminal lourd (type 3780) à 2.400 bauds	par heure	250,00

C. STOCKAGE SUR DISQUES OU BANDES MAGNETIQUES

unité (appelée cylindre) = 120.000 octets (caractères)

disques permanents	: 1 à 5 cylindres, par cylindre	par mois	200,00
	: 6 à 25 cylindres, par cylindre	« «	175,00
	: 26 à 50 cylindres, par cylindre	« «	130,00
	: 51 à 200 cylindres, par cylindre	« «	100,00
	: au-delà de 200 cylindres	« «	80,00
disques temporaires	: pour 5 cylindres	par heure	37,50
	: pour 10 cylindres	« «	75,00
	: pour 20 cylindres ≤200	« «	150,00
utilisation « en ligne » de disques privés, par disque		par heure*	225,00**
utilisation « en ligne » de bandes magnétiques, par bande		par heure*	90,00**
	: location d'un dispac 2316 ([illegible]	par mois	225,00
	: location d'une bande magnétique (720 m)	« «	50,00

* unité : 0,1 heure (arrondi supérieur)

** facturation minimum : 0,3 heure

D. DIVERS

	FRANCS
• sauvegarde (copie) sur bande du contenu d'un disque type 2314 *privé*	100,00
• changement du papier sur l'imprimante de CSS France	50,00
• frais d'expédition	frais réels
• transfert d'information d'un centre de calcul (Stamford, Sunnyvale) à un autre par bloc de 400 octets	0,11

E. FACTURATION MENSUELLE MINIMUM

• facturation mensuelle minimum	500,00

F. HORAIRES DE SERVICE

- du lundi au vendredi : 8 h. 30 - 18 h. 30
- le samedi : 8 h. 30 - 12 h. 30

(Des changements peuvent intervenir occasionnellement pour des raisons de maintenance des systèmes ou du réseau ; CSS France s'efforcera d'en informer le client à l'avance.)

NOS FACTURES SONT PAYABLES A RECEPTION.

Les prestations non prévues dans ce tarif seront proposées suivant devis particulier.

La présente Annexe A au contrat de prestations de services n° , émise le

annule et remplace toute autre Annexe A audit contrat émise antérieurement.

APPENDIX : TARIFFS

G. FRANLAB

APPENDIX : TARIFFS

G. FRANLAB

TARIFICATION DU SYSTEME

CDC 7600 - CYBER 171

CONDITIONS GENERALES - SERVICE BUREAU

1er Août 1978

FACTURATION DES TRAVAUX SUR LE SYSTEME

CDC 7600 - CYBER 171

La présente notice détaille le tarif des services suivants :

- Traitement par le système CDC 7600 - CYBER 171
- Utilisation des équipements périphériques
- Assistance et services

Tous nos prix s'entendent hors taxes.

I - COUT D'UN TRAVAIL

$$C = T.\ UC.\ P$$

T Tarif de l'unité de compte.

UC Nombre entier d'unités de compte calculé selon les formules indiquées dans les pages suivantes.

P Priorité demandée

Le prix de l'unité de compte hors contrat est de 2,50 Frs.

Le minimum par travail est d'une unité de Compte.

II - PRIORITES

EXPRESS : Conditions contractuelles

STANDARD : P = 1

DIFFERE : P = 0,75 sur la base du tarif standard

Les définitions contractuelles des services sont indiqués dans notre contrat standard.

1. TRAITEMENT SUR LE 7600

1.1 DEFINITION DE L'UNITE DE COMPTE

$$\boxed{UC = 5\ (TT + TS)}$$

où TT représente le temps de traitement donné par :

$$TT = (CPu + 0{,}55 \times Cpio) \times (1 + 0{,}01 \times S + 0{,}002 \times L$$

et TS représente le temps de staging donné par :

$$TS = 8{,}25 \times 10^{-6}\ (M + 80B + 360000\ n)$$

avec CPu : Temps CP utilisateur hors entrées/sorties (I/O)

CPio : Temps CP I/O - ce temps est proportionnel au nombr d'accès disque, à la quantité de buffers vidés de et vers la LCM, à la quantité de mots transmis de et vers la SCM.

S : FL (Field Length) moyen utilisé en SCM (Small Core Memory) en K mots de 60 bits.

L : FL moyen utilisé en LCM (Large Core Memory) en K mots de 60 bits.

M : Nombre de mots transférés

B : Nombre de blocs transférés (dans le cas d'un fichier permanent B = 0)

n : Nombre de bandes magnétiques montées durant le mê travail (dans le cas d'un fichier permanent n = 0

II. TRAITEMENT SUR CYBER 171

II. 1 TRAITEMENTS PAR LOTS

$$\boxed{UC = 0.3\ CP + 0.5\ IO + 0{,}01\ CM}$$

où CP : mesure l'utilisation du calculateur central

IO : mesure l'utilisation des canaux entre l'unité centrale d'une part, les disques et les dérouleurs de bande d'autre part.

CM : mesure l'utilisation de la mémoire en K mots x secondes selon la formule :

$$\boxed{CM = \Sigma_i \quad FL_i \quad (0{,}\ 33\ \Delta_i\ CP + 1{,}64\ \Delta_i\ IO)}$$

avec FL : nombre de K mots en mémoire centrale

$\Delta_i CP$
$\Delta_i IO$: temps de CP et IO entre deux variations de la taille mémoire.

II. 2 TRAITEMENT CONVERSATIONNEL

Le temps facturable est donné par la formule :

$$UC = (1 + K)\ (0{,}3\ CP + 0{,}5\ IO + 0{,}08\ CM)$$

K est un coefficient appliqué aux utilisateurs interactifs ayant droit à une taille maximum de mémoire FL max supérieure à 25.000 mots, avec les valeurs suivantes :

FL max $\leqslant$ 25.000 mots $K = 0$

FL max $>$ 25.000 mots $K = 8 \times 10^{-6} \cdot (FL\ max - 25.000)$

Les définitions des grandeurs et le tarif de base étant les mêmes qu'en traitement par lot.

III. EQUIPEMENTS PERIPHERIQUES

LECTEUR - IMPRIMANTE - PERFORATEUR - TRANSMISSION D'UNE AGENCE

TYPE	Unité de Compte	Minimum de Charge	Prix en F. Unité de Co
Cartes lues	100 c	200 c	1,50
Lignes imprimées	100 l	400 l	1,50
Cartes perforées	100 c	100 c	6,60
Transmissions agence	100 c	5.10^4 cart	0.0175

III.2 DEROULEUR DE BANDES

Des dérouleurs 7 et 9 pistes sont actuellement disponibles. Le utilisation par le 7600 est facturée par l'intermédiaire du ter de staging.
Leur utilisation par la machine frontale implique un droit de montage de 19 F.

Des bandes magnétiques peuvent être achetées à FRANLAB-INFORMA

III.3 STOCKAGE DE BANDES MAGNETIQUES :

La bande stockée : 0,15 F/jour

III.4 LES FICHIERS PERMANENTS

La résidence en fichier permanent en Francs et par jour calend est facturée ainsi :

Coût du stockage = K * (20000P + M)

où P : est le nombre de fichiers permanents (sans considération du nombre de cycles)

Le nombre de mots, M (de 10 caractères) est défini comme la somme des tailles maximales atteintes par chacun des fichiers aux cours de la journée.

Détermination de K :

en 7600 : $K = 3,35 \times 10^{-4}$

en machine frontale : $K = 2,25 \times 10^{-4}$

III.5 TRACEUR DE COURBES

Traceur Benson 132 : - Frais fixes : 24,00 Frs (montage et préparation des tracés)

- 5,80 Frs/Minute de tracé

Digitaliseur : sur demande spécifique

IV. ASSISTANCE ET SERVICES

IV.1 ASSISTANCE

Une importante équipe d'assistance se tient à la disposition des utilisateurs pour faciliter l'utilisation du système 7600 - Cyber 171.

IV.2 FORMATION - DOCUMENTATION

Des cycles de formation, organisés par Franlab-Informatique permettent d'acquerir ou d'approfondir les différents outils informatiques disponibles sur le Système avec une documentation complète. Le calendrier de ces différents cours est indiqué sur une brochure séparée.

IV.3 ATELIER DE PERFORATION

Les travaux soumis à notre atelier de perforation sont facturés selon la nature du travail au tarif suivant :

- perforation et vérification de données numériques : 0,75 F
- perforation de cartes FORTRAN : 0,75 F
- vérification de cartes FORTRAN : 0,75 F
- interprétation de cartes perforées : 0,22 F

Une surcharge est à prévoir lorsque les bordereaux présentent des difficultés particulières de lecture.

IV. 4 BIBLIOTEQUE DE PROGRAMME

Une bibliothèque de plus de 400 programmes est à la disposition des utilisateurs. Elle couvre les domaines les plus divers alla des mathématiques appliquées à la gestion (voir notre liste com plète).

Les conditions d'utilisation sont propres à chaque programme et sont données dans la brochure "Bibliothèque de programme".

IV-5 ETUDES

Notre bureau d'étude prend en charge l'analyse et la réalisation de tout programme scientifique ou de gestion Scientifique.

Les tarifs journaliers concernant les prestations "Conseil et Etudes" sont les suivants :

- temps ingénieur en chef	2.700 Frs
- temps chef de projet	2.300 Frs
- temps ingénieur expert	1.900 Frs
- temps analyste programmeur	1.300 Frs

IV.6 BUREAUX

Des locaux banalisés sont mis gracieusement à la disposition de nos Clients. Des bureaux privés peuvent également être fournis sous réserve d'accords spéciaux entre FRANLAB INFORMATIQUE et le Client.

V. CONDITIONS DE FONCTIONNEM

V.1. HORAIRES DE FONCTIONNEMENT

- Ouverture des bureaux

9 H 00 - 17 H 30

- Fonctionnement du système CDC

9 H 00 - 20 H 00

Les passages sont possibles au delà de 20 H à condition de préve le chef d'exploitation du Centre.

V.2. CONDITIONS DE PAIEMENT

Le paiement doit intervenir à 45 jours de la date de facturation

APPENDIX : TARIFFS

H. GEIS

APPENDIX : TARIFFS

H. GEIS

HB Network Information Services

Filiale **Honeywell** Information System et Cie des Machines **Bull**

TARIF DES SERVICES INFORMATIQUES MARK III

Date : 01/07/78

1. DROIT INITIAL

Le droit initial d'accès aux services est de .... 1 000 F H.T.

2. REDEVANCES MENSUELLES

Les redevances mensuelles sont calculées en fonction de l'utilisation des services faite par le Client. Elles sont soumises au minimum suivant :

— minimum par facture de service .... 100 F H.T.

La surtaxe téléphonique n'est pas prise en compte pour le calcul de ce minimum.

Chaque numéro d'utilisateur validé nécessite une unité de stockage de programme (PSU) dont la facturation entre dans ce calcul.

Les services offerts et les redevances mensuelles correspondantes sont les suivants :

3. TEMPS PARTAGE conversationnel (Foreground)

31. ENTREE - SORTIE - TERMINAL

311. Définitions

3111. *Temps de connexion du terminal* (unité : TCH)

Le temps de connexion du terminal est le temps qui s'écoule entre la connexion du terminal au système et sa déconnexion tel qu'indiqué et/ou enregistré par le système. Ce temps de connexion, enregistré par le système, est calculé périodiquement (ordinairement chaque jour) et totalisé en heures et centièmes d'heure. Le total général de ces enregistrements journaliers est facturé mensuellement.

3112. *Nombre de caractères d'Entrée/Sortie* (unité : KCH)

Ce nombre est mesuré en milliers de caractères (avec totalisation par dixièmes de KCH) tels qu'indiqués et/ou enregistrés par le système. Les KCH comprennent par définition tous les caractères, y compris les caractères non imprimables, transmis au, ou reçus du système.

3113. *Enregistrement*

Un enregistrement correspond à une carte ou une image-carte sur bande magnétique, en entrée ou en sortie, ou encore, pour l'imprimante, à une ligne, qu'il y ait ou non impression.

312. Facturation

La facturation est effectuée mensuellement suivant les tarifs ci-dessous (en francs, hors taxe).

Le client à la possibilité de choisir entre le tarif de base ou l'option C, qui sont applicables au niveau des catalogues :

VITESSES	OPTIONS	TARIF de BASE	C		
	Tranches		1	2	3
BASSE VITESSE ≤ 300 bds	T.C.H.	85,50	98,55	82,75	59,09
	Seuils Tranches			> 15 h	> 45 h
	K.C.H.	—	2,21	1,61	0,75
	Seuils Tranches			> 250	> 750
MOYENNE VITESSE 1200 bds	T.C.H.	244,00	197,33	166,56	142,16
	Seuils Tranches			> 10 h	> 30 h
	K.C.H.	—	1,84	1,52	1,11
	Seuils Tranches			> 500	> 1500
HAUTE VITESSE 2400 bds	T.C.H.	131,55	131,55	117,76	103,97
	Seuils Tranches			> 10 h	> 20 h
	par 100 enregistrements	1,72	1,72	1,61	1,43
	Seuils Tranches			> 250	> 750

L'option choisie est obligatoirement la même que celle portée en paragraphe 322, ci-dessous.

Ces services nécessitent l'utilisation de l'un des terminaux agréés par le Fournisseur pour connexion au réseau MARK III, à l'exclusion de tout autre terminal.

313. Surtaxe

A la facturation des éléments précédents s'ajoute la refacturation de la surtaxe téléphonique pour transmission de données, imposée par l'Administration des P & T ; cette refacturation est effectuée sur la base forfaitaire de 20 unités de base par heure de connexion (Décret n° 73.601 du 04.07.1973 du Ministère des P & T) révisable sans préavis sur décision des P & T.

32. RESSOURCES UNITE CENTRALE ET STOCKAGE

321. Définitions

3211. *Utilisation de l'unité centrale* (unité : CRU)

Le nombre de CRU est fonction du temps processeur et de la taille mémoire utilisée. Les CRU sont enregistrés et totalisés périodiquement par le système.

3212. *Stockage de programmes* (unité : PSU)

Un PSU correspond au stockage sur disque de 320 mots de 36 bits.
Il inclut les caractères administratifs dont le système a besoin pour sa gestion.

3213. *Stockage de fichiers binaires* (unités : DSU - HSU)

Un DSU, ou un HSU offre la même capacité de stockage qu'un PSU ; cependant, les DSU correspondent au stockage de fichiers binaires de données (non exécutables) ou de fichiers-programmes exécutables sous forme « core-image » et les HSU au stockage de fichiers binaires de données qui ne sont accessibles que par les sous-programmes HISAM (Mark III HIERARCHICAL INDEX SEQUENTIAL METHOD) et les programmes de librairie qui font appel à cette méthode.

3214. Le montant du stockage utilisé (en PSU - DSU - HSU) est facturé sur la base d'une moyenne mensuelle calculée à partir d'une moyenne journalière.
Les valeurs correspondantes sont arrondies à l'unité supérieure.

322. Facturation

La facturation est effectuée mensuellement dans l'une des options suivantes :

	OPTION	TARIF de BASE	C		
	Tranche		1	2	3
UNITÉ CENTRALE	CRU Seuils Tranches	1,27	1,27	1,13 > 2000	0,95 > 6000
STOCKAGE	PSU	11.19	10.50	9,49	7.91
	Seuils Tranches			> 180	> 540
	DSU	6.90	6,47	4.35	1.27
	Seuils Tranches			> 90	> 270
	HSU	1.04	1.04	1.04	1.04

Si le client précise l'option choisie, il est facturé conformément à ce choix. En l'absence d'indication, il est facturé selon le tarif de base.

Option choisie : ....

Si le client désire changer d'option, il le signifie au Fournisseur par écrit en précisant la nouvelle option retenue. Si le fournisseur reçoit cette notification avant le 15 du mois, la nouvelle option sera appliquée pour la facturation de la consommation du mois suivant.

33. PRIORITES

L'utilisateur a le choix entre plusieurs niveaux de rapidité de traitement (grâce à la procédure dite INDEPENDENT RUN) pour l'utilisation du service Foreground.

Les coefficients multiplicateurs du nombre de CRU correspondant à ces différents niveaux, sont les suivants :

	Nombre CRU
• immédiat	x 1.0
• différé (début de traitement dans les 3 heures)	x 0.6
• de nuit (début de traitement dans les 24 heures)	x 0.4

Si le fournisseur ne peut assurer la priorité demandée, la facturation est établie en fonction du service réellement fourni.

34. AUTRES SERVICES

Archivage :

Le service d'archivage offre la possibilité de stocker sur un support auxiliaire des données qui ne nécessitent pas un accès direct et immédiat. A la demande du client, formulée à partir de son terminal, les fichiers indiqués sont dupliqués sur bande magnétique et archivés en dehors du système. Ces fichiers peuvent être rechargés sur disque sous 24 heures.

• archivage de fichier	45,62 F par fichier
• rechargement de fichier	92,30 F par fichier
• coût du stockage par unité ASU par mois (complet ou non) 1 ASU = 1 DSU ou PSU ou HSU	0,20 F

4. TRAITEMENT PAR LOTS à distance (Background)

L'on accède au Background par l'intermédiaire du Foreground, dont l'utilisation est facturée suivant l'option choisie. Les ressources propres au background et la facturation correspondante sont les suivantes :

41. GCOS Background (Système Honeywell)

411. Définitions

4111. *Utilisation de l'unité centrale (Background CRU)*

Le nombre de CRU est fonction du temps processeur et de la taille mémoire utilisée. Les CRU sont enregistrés et totalisés périodiquement par le système.

4112. *Stockage Background sur disque* (DSU)

Les DSU sont définis et enregistrés comme pour le service FOREGROUND.

4113. *Stockage sur bande magnétique*

Le client peut demander que ses informations soient stockées sur bande magnétique. Dans ce cas, la facturation est effectuée par bobine par mois et par opération de montage en cours de traitement.

412. Facturation

La facturation est effectuée mensuellement, au tarif suivant (en francs, hors taxe) :

• Background CRU	2 870,00 F
• Background DSU	1,70 F
• Stockage sur bande magnétique	
— par bobine (complète ou non)/mois (complet ou non)	26,00 F
— par opération de montage	10,18 F

413. Priorités

L'utilisateur a le choix entre plusieurs niveaux de rapidité de traitement pour l'utilisation du service Background. Les différents niveaux, et prix correspondants, sont les suivants :

	Nombre CRU
• immédiat	x 4.0
• express (début de traitement dans les 15 minutes)	x 2.0
• normal (début dans les 3 heures)	x 1.0
• différé (début dans les 24 heures)	x 0.75

Si le Fournisseur ne peut assurer la priorité demandée, la facturation est établie en fonction du service réellement fourni.

42. VS Background (Système IBM)

421. Définitions

4211. *Utilisation de l'Unité Centrale* (unité : CRU)

Le nombre de CRU est fonction du temps processeur et de la taille mémoire utilisée. Les CRU sont enregistrés et totalisés périodiquement par le système.

4212. *Stockage sur disque du système* (unité : ISU)

Un ISU correspond par définition au stockage sur disque du système de 13.030 octets (ou bytes), y compris les caractères administratifs nécessaires à sa gestion. Le nombre d'ISU est arrondi à l'unité supérieure.

4213. *Stockage sur disques amovibles*

Le client peut demander que ses informations soient stockées sur un (ou plusieurs) dispack (s) à lui réservés. La facturation est effectuée par dispack par mois, selon le type, et par opération de montage en cours de traitement.

4214. *Stockage sur bande magnétique*

Le client peut demander que ses informations soient stockées sur bande magnétique. Dans ce cas, la facturation est effectuée par bobine par mois et par opération de montage en cours de traitement.

422. **Facturation**

La facturation est effectuée mensuellement au tarif suivant (en francs, hors taxe) :

VS BACKGROUND CRU	3 055.00
ISU	8,27
Stockage sur disque amovible — par dispack modèle 3336/mois — par opération de montage	 763,85 101,85
Stockage sur bande magnétique — par bobine (complète ou non)/mois (complet ou non) — par opération de montage	 26,00 10,18

423. **Priorités**

Certaines des priorités définies au paragraphe 413 peuvent exister.

5. **SERVICE MCS** (changement de support de fichiers sur terminal lourd)

Media Conversion

Le fournisseur, sur demande du client et en fonction de ses disponibilités, procédera au transfert des fichiers du client du système disques MARK III à un autre support, ou inversement.

Les prix de ce service sont les suivants :

• Disque à cartes	110 F par 1 000 enregistrements
• Cartes à disque	55 F par 1 000 enregistrements
• Disque à imprimante (en 1 ex)	55 F par 1 000 enregistrements
• Disque à imprimante (2 à 3 ex)	62 F par 1 000 enregistrements
• Bande magnétique	55 F par 1 000 enregistrements
• Disque à bande	55 F par 1 000 enregistrements
• MINIMUM par opération	120 F

A noter :

— Les fournitures ne sont pas incluses dans les prix.

— Les frais d'expédition et de transport sont facturés en sus.

6. **OPERATIONS DIVERSES**

61. MODIFICATIONS ADMINISTRATIVES

TO ESTABLISH AN ACCOUNT -

Le client peut demander au fournisseur diverses validations ou modifications, par exemple adjonction ou suppression d'un numéro d'utilisateur, un changement d'option tarifaire :

• Prix par opération	175 F
• Minimum facturé par demande	350 F

La validation initiale ne donne pas lieu à facturation.

62. RESTAURATION DE FICHIERS EFFACES

Aucun fichier ne pourra être restauré passé un délai de six mois après l'effacement.

Pendant cette période, les prix de restauration sont les suivants :

• Réception de la demande dans les 15 jours suivant l'effacement	104 F par fichier
• Réception de la demande après 15 jours et moins de 6 mois après effacement (fichiers de fin de mois seulement)	144 F par fichier
• Minimum par opération de restauration (dans les deux cas) [illegible]	208 F

63. TRANSFERT DE FICHIERS DE CATALOGUE A CATALOGUE

Sur demande du client, les fichiers peuvent être transférés d'un catalogue à un autre, aux prix suivants :

• par fichier	37 F
• minimum par demande	185 F
• maximum par demande	933 F

7. **ACCES AUX SERVICES MARK III**

71. FOREGROUND ET GCOS BACKGROUND

Les services MARK III Foreground et GCOS Background sont garantis accessibles les jours ouvrables, du lundi au vendredi, durant 200 heures par mois au minimum.
Cependant, ces services sont habituellement accessibles sept jours sur sept, vingt-quatre heures sur vingt-quatre, sous réserve d'une contrainte de maintenance du système de seize heures par semaine en moyenne.

72. VS BACKGROUND

Le service VS Background est accessible suivant disponibilité du lundi au vendredi de 4 h à 22 h et le samedi de 8 h à 22 h, NEW YORK STANDARD TIME.

8. SERVICES DIVERS

Un certain nombre de services sont disponibles, tels que cours de formation, documentation, conseil, analyse, programmation, etc... Ils sont facturés au tarif en vigueur.

APPENDIX : TARIFFS

I. G.S.I.

- **TARIFF**

Based on the "Q Hour".

There are two main types of billing

(a) Full Service (with added services for printing, delivery etc.)

(b) Raw 'Q Hour'.

There are two tariffs according to priority

Normal	2900 FHT per Q Hour
Express	3600 FHT per Q Hour

These are full service tariffs. There is no difference for overnight turnaround.

- **VOLUME DISCOUNT**

For sales in excess of 500,000 FHT per annum, there is a degressive tariff for volume.

Volume Basis Q Hours/Month	Rate FHT/Q Hour	Discount %
0 - 34	2900	-
34-39	2465	15
40-49	2030	30
50 +	1600	45

80 Q Hours per month is equivalent to an annual expenditure of 960,000 FHT per annum at the 45% discount rate or 1,740,000 FHT per annum of no discount.

FORMULE DE L'HEURE Q

FORMULE DE L'HEURE Q

La détermination des quantités des ressources consommées par un travail lors de son exécution en ordinateur est faite à partir des données fournies par le produit programme de l'IBM "System Management Facilities" (SMF).

La détermination des consommations de ressources est fait "job" par "job" (le terme "job" est pris au sens de l'IBM) par des programmes écrits par *CS INFORMATIC* ; ces programmes acceptent les informations de SMF en tant que mesure et en tirent un résultat à l'aide d'une formule dite "Formule de l'heure Q".

Le résultat est exprimé en "heures équivalentes" ; les sous-multiples habituels de cette unité sont décimaux. Cependant, on utilisera parfois les sous-multiples sexagésimaux "minutes équivalentes" et "secondes équivalentes".

Les mesures de SMF sont effectuées "step" par "step", de même que les calculs intermédiaires ; les résultats sont fournis seulement au niveau du job.

Les grandeurs mesurées sont :

tc_i	Temps CPU consommé par le step i en secondes
nd_i	Nombre d'EXCP's disques effectués au cours du step i
nb_i	Nombre d'EXCP's bandes effectués au cours du step i
nu_i	Nombre d'EXCP's U.R effectués au cours du step i
ng_i	Nombre d'EXCP's graphiques effectués au cours du step
ntp_i	Nombre d'EXCP's communications effectués au cours du
np_i	Nombre de fichiers disques alloués pour le step i
nt_i	Nombre de fichiers bandes alloués pour le step i
sm_i	Taille mémoire allouée pour le step i en Koctets
nl_i	Nombre de lignes imprimées par le step i *
nc_i	Nombre de cartes lues par le step i
N	Nombre de step du job
NL	Nombre de lignes imprimées par le job *

* Si le job s'est déroulé sous HASP le nombre de lignes imprimées sera comptabilisé step par step (nl_i).

Hors HASP le nombre de lignes sera cumulé au niveau job (NL).

Les coefficients utilisés sont :

Ac	Coefficient CPU	vaut 1,94
Kmi	Coefficient mémoire $= Vo + \left(\frac{V1 - Vo}{Maxi - Mini} \times (smi - mini) \right)$	
	pour $0 \leqslant smi < 110$	$Vo = 0$, $V1 = 0,3$, $mini = 0$, $maxi = 110$
	pour $110 \leqslant smi < 220$	$Vo = 0.3$, $V1 = 0.7$, $mini = 110$, $maxi = 220$
	pour $220 \leqslant smi$	$Vo = 0.7$, $V1 = 2.0$, $mini = 220$, $maxi = 330$
Ad	Coefficient EXCP disque	vaut 25×10^{-3} secondes
Ab	Coefficient EXCP bande	vaut 16×10^{-3} secondes
Au	Coefficient EXCP Unit Record (unités lentes).	vaut 87×10^{-3} secondes
Ag	Coefficient EXCP graphique	vaut 87×10^{-3} secondes
At	Coefficient EXCP communication	vaut 87×10^{-3} secondes
Od	Coefficient occupation disque	vaut 70×10^{-3}
Ob	Coefficient occupation bande	vaut 240×10^{-3}
Cd	Coefficient allocation disque	vaut 2 secondes
Cb	Coefficient allocation bande	vaut 4 secondes
Cs	Coefficient allocation step	vaut 4 secondes
Cj	Coefficient allocation job	vaut 6 secondes
Cl	Coefficient spooling d'une ligne	vaut 7×10^{-3} secondes
Cc	Coefficient spooling d'une carte	vaut 5×10^{-3} secondes

La formule se développe comme suit :

$$\boxed{Q = (Qc + Qm + Qp + Qs) / 3\ 600}$$

Q est le nombre d'heures équivalentes d'un job.

Qc est la nombre de secondes équivalentes provenant de l'utilisation du CPU.

Qm est le nombre de secondes équivalentes provenant de l'utilisation de la mémoire centrale.

Qp est le nombre de secondes équivalentes provenant de l'immobilisation des périphériques rapides.

Qs est le nombre de secondes équivalentes provenant de l'utilisation du système d'exploitation.

On a :

$$Qsi = Cs + (npi \times Cd + nti \times Cb + nci \times Cc + nli \times Cl)$$

$$\boxed{Qs = Cj + NL \times Cl + \sum_1^n Qsi}$$

$$\boxed{Qc = \sum_1^n Ac \times tci}$$

On introduit les grandeurs intermédiaires :

$$twi = Ad \times ndi + Ab \times nbi + Au \times nui + Ag \times ngi + At \times ntpi$$

$$tri = twi + tci \qquad \text{et} \qquad Kpi = npi \times Od + nti \times Ob$$

$$\boxed{Qm = \sum_1^n Kmi \times tri}$$

$$\boxed{Qp = \sum_1^n Kpi \times tri}$$

APPENDIX : TARIFFS

J. I.B.M.

- TARIFF

The computer automaticaly computes and prints the cost of each job according to the tariff determined by the job number.

- VOLUME DISCOUNT

A glance at IBM's discount book showed that discounts at various annual volumes of business were:

Annual Expenditure FHT Millions/annum	Discount Rate
½	10
1	20
15	40

No other information could be obtained on this subject.

IBM

Compagnie IBM France

3 et 5 place Vendôme
Paris 1er
Boîte postale 75
75021 PARIS CEDEX 01
Téléphone : (1) 296 14 75
SIRET : 552 118 465 00012

CENTRE DE SERVICES IBM
CONVENTION DE PRESTATIONS DE SERVICES

ANNEXE
SERVICE DE TRAITEMENT DE L'INFORMATION
MVS/JES 3

Nom et Adresse du Client :

N° d'Entreprise Client (SIREN) :

N° de Convention :

Code Client :

N° d'Annexe :

Code Dépt. Cial :

Date d'émission :

1 – OBJET

IBM s'engage à mettre à la disposition du Client, qui accepte, aux prix et conditions indiqués dans la présente annexe, un Service de Traitement de l'Information permettant d'effectuer des travaux sur un ordinateur IBM 370/168 fonctionnant avec le système MVS/JES 3.

2 – PRIX

158

Toutes les prestations seront facturées au tarif ci-dessous, sous réserve de l'application des redevances fixes ou des redevances minimums.

2 - 1 Traitement

2 - 1 - 1 Définition

Le prix d'un travail (passage machine) est obtenu en faisant la somme des prix :

- de chacune des étapes de travail (steps) ;
- des montages de supports magnétiques ;
- des opérations périphériques.

2 - 1 - 2 Etapes de Travail

a) Méthode de calcul

Le prix d'une étape de travail est calculé en appliquant la formule suivante :

$$P_{Etape} = P_S + (P_{I/O} \times T_{I/O}) + (P_{CPU} \times T_{CPU}) + P_C \times N_K\ (T_{I/O} + T_{CPU})$$

dans laquelle :

P_S est le prix de l'initialisation de l'étape ;

$P_{I/O}$ est le prix servant à valoriser le temps d'activité des entrées/sorties ;

$T_{I/O}$ est le temps d'activité des entrées/sorties ;

P_{CPU} est le prix servant à valoriser le temps d'utilisation de l'unité centrale ;

80

T_{CPU} est le temps d'utilisation de l'unité centrale ;

P_C est le prix servant à valoriser un K octets (1024 octets) de mémoire virtuelle utilisé pour l'étape ;

N_K est le nombre de K octets de mémoire virtuelle utilisés, avec un minimum de 64 K octets.

b) Prix

P_S = ...16,00... Francs par étape ;
$P_{I/O}$ = ...34.00,00... Francs par heure ;
P_{CPU} = ..23.000,00... Francs par heure ;
P_C = ...4,00... Francs par K octets par heure.

c) **Programmes Généraux d'Application**

Lorsqu'un programme général d'application est utilisé au cours de certaines étapes de travail, le prix de ces étapes est majoré d'un pourcentage variable selon le programme. Ce pourcentage est communiqué au Client sur demande.

La majoration pour utilisation des programmes généraux d'application n'entre pas en ligne de compte dans le calcul des réductions effectuées au titre du tarif dégressif mensuel ou de l'engagement minimum annuel.

2 - 1 - 3 Montages de Supports Magnétiques

— Les montages de supports magnétiques sont comptabilisés au niveau du travail, à l'aide de la formule suivante :

Prix des montages = $P_I \times N$ 158

dans laquelle :

N est le nombre de montages effectués pour le traitement du travail ;

P_I est le prix du montage d'un support magnétique. Il est de :
. . . . . . .28,00. . . . F par montage.

— Le temps d'immobilisation de l'unité additionnelle sur laquelle est montée le support magnétique n'est pas décompté.

2 - 1 - 4 Opérations périphériques

a) **Lecture de cartes :**

- les 4 000 premières cartes : . . . . .22,46. . F le mille par opération
- au delà de 4 000 cartes : . . . . .14,28. . F le mille par opération

b) **Perforation de cartes :**

- les 4 000 premières cartes : . . . . .89,98. . . F le mille par opération
- au delà de 4 000 cartes : . . . . .71,69. . . F le mille par opération

c) **Impression de lignes :**

- les 4 000 premières lignes : . . . . .22,46. . . F le mille par opération
- au delà de 4 000 lignes : . . . . .14,28. . . F le mille par opération

d) **Opérations particulières :**

- Utilisation de cartes Client en perforation : . . .39,17. . . . . F par opération ;
- Pour les imprimantes :
  591
  Montage de papier non standard du Centre : . . .39,17. . . . . F par opération ,
  Montage d'imprimés Client : . . . . .71,23. . . . . . . F par opération.

2 - 2 Stockage sur disques permanents

Jusqu'à 2 000 000 octets : . . . . .0,63. . . . . F/1000 octets/mois ;
du 2 000 001e au 4 000 000e octets : . . . . .0,53. . . . . F/1000 octets/mois ;
du 4 000 001e au 8 000 000e octets : . . . . .0,37. . . . . F/1000 octets/mois ;
au delà du 8 000 000e octet : . . . . .0,32. . . . . F/1000 octets/mois.

Facturation minimum : 200 000 octets/mois.

2 - 3 Location de volumes virtuels sur le sous-système 3850

Le prix est de : . . . . .345. . . . . . F/volume/mois.

Un volume virtuel est égal à deux cartouches.

2 - 4 Location de supports magnétiques

— Bandes magnétiques de 720 m : . . . . .58,89. . . . . F/mois/unité
— Disques magnétiques amovibles :
3336 - 001 : . . . . .502,09. . . . F/mois/unité
3336 - 011 : . . . . .753,14. . . . F/mois/unité

2 - 5 Fournitures

— Cartes bulle standard 80 colonnes : . . . . .20,49. . . . . Francs le mille

— Papier blanc en continu pour imprimante :

- 1 exemplaire : . . . . .98,40. . . . Francs le millier de feuilles ;
- 2 exemplaires : . . . . .277,30. . . . Francs le millier de liasses ;
- 3 exemplaires : . . . . .467,40. . . . Francs le millier de liasses ;
- 4 exemplaires : . . . . .637,30. . . . Francs le millier de liasses.

2 - 6 Travaux annexes

2 - 6 - 1 Façonnage, manutention : ....65,00.. Francs/heure

2 - 6 - 2 Sur le sous-système 3850 :

- Chargement ou déchargement d'une cartouche : ....39,17..... Francs par opération
- Conversion d'un volume physique en volume virtuel ou vice versa : .450,00..... Francs par opération

2 - 6 - 3 Utilisation de traceur de courbes : ....783,75..... Francs par heure

2 - 6 - 4 Travaux effectués par le personnel IBM :

Selon ses disponibilités, IBM pourra mettre à la disposition du Client, pour une durée limitée à deux journées de travail, avec une durée de vacation minimum de 1/2 journée de travail, le personnel qualifié pour effectuer les travaux suivants :

- contrôle d'exploitation : ....86,00.. Francs par heure ;
- assistance d'applications : ....337,00.. Francs par heure.

2 - 7 Tarif dégressif mensuel ou engagement minimum annuel

Au titre des prestations objet de l'article 2.1 ci-dessus, le Client bénéficie des réductions figurant soit dans une annexe «Tarif Dégressif Mensuel», soit dans une annexe «Engagement Minimum Annuel», chaque annexe étant exclusive de l'autre.

L'option choisie est ...Tarif Dégressif Mensuel.............................

objet de l'annexe n° ....

2 - 8 Taxes

Les prix indiqués ci-dessus sont des prix hors taxes. Le taux de la TVA applicable est actuellement de ..17,60 %

3 – NOTIFICATION DES ERREURS

Toute erreur imputable à IBM doit lui être signalée par le Client dans les cinq jours ouvrables qui suivent la disponibilité des résultats ; sinon le Service est réputé accepté par le Client.

4 – DISPONIBILITE DU SERVICE

Le Service est à la disposition du Client de ......9...heures 00. à ..19... heures 15, du lundi au vendredi, à l'exception des jours fériés, des jours de congés d'IBM et du temps normalement nécessaire à l'entretien du système.

5 – DUREE DU SERVICE

Le Service sera fourni par IBM pendant une «Période Spécifiée» de ..3...mois.
il sera renouvelable dans les conditions prévues à l'art. 7 du Contrat

Le début de la Période Spécifiée sera la première des deux dates suivantes :

- ou bien la date à laquelle le Client commencera à utiliser le Service ;
- ou bien le .... (Date de début prévue). Toutefois, si le Service n'est pas encore disponible pour le Client à la date de début prévue, en raison d'un retard d'IBM, la date de début de la Période Spécifiée sera la date à laquelle le Service deviendra disponible pour le Client.

(*) Si le Service est renouvelable, le préciser à cet endroit.

6 – GENERALITES

Les dispositions de la présente annexe sont modifiables à tout moment sans préavis jusqu'à réception par IBM de ce document signé par le Client. IBM ne sera liée que lorsqu'elle aura manifesté son acceptation en signant cette annexe.

Les prix et modalités ci-dessus sont ceux en vigueur à la date d'émission de l'annexe ; ils restent modifiables conformément aux dispositions de la Convention.

Fait en double exemplaire,

A le	A le
Lu et Approuvé Compagnie IBM France (Nom et Qualité du Signataire)	Lu et Approuvé Le Client (Nom et Qualité du Signataire)

APPENDIX : TARIFFS

K. SLIGOS

- TARIFF

  See attachment

- VOLUME DISCOUNT

  No information obtainable, but discounts are given for volume.

1 - TEMPS MACHINE ET FOURNITURES

1 - 370/158

1.1 - Formule de base de facturation

1.1/1 - Mémoire + périphériques rapides (disques et bandes)

1 s de CPU	1,81 F
1 K x 1 s de (T.CPU + T.I/O)	$7,6 \times 10^{-4}$ F
1 dérouleur de bande magnétique x (1 s T.CPU + T.I/O)	$22,7 \times 10^{-3}$ F
1 piste 3330 x (1 s (T.CPU + T.I/O)	$9,5 \times 10^{-6}$ F
~~1 piste 2314 x 1 s (T.CPU + T.I/O)~~	$4,8 \times 10^{-6}$ F

Temps I/O = nombre total d'accès sur l'ensemble des unités périphériques utilisées x temps d'accès moyen.

Ces éléments varient en fonction du temps de réponse demandé et de la classe demandée.

Définition des classes :

	Limite partition	Limite périphérique
A	100 K	3 dérouleurs
B	200 K	4 dérouleurs
C	300 K	5 dérouleurs
D	650 K	6 dérouleurs

Classe \ Temps de réponse (1)	2 h jour	4 h jour	12 h jour	Nuit	48 h et plus
A	1,3 (+ 30%)	1	0,8 (- 20%)	0,7 (- 30%)	0,67 (- 33%)
B	1,5 (+ 50%)	1,3 (+ 30%)	1	0,75 (- 25%)	0,7 (- 30%)
C	▨	1,5 (+ 50%)	1,3 (+ 30%)	0,8 (- 20%	0,75 (- 25%)
D	▨	▨	▨	0,9 (- 10%)	0,8 (- 20%)

---

(1) Temps de réponse : délai entre soumission et initialisation du JOB.

1.1/2 - Périphériques lents (imprimante et lecteur perforateur)

1 ligne imprimée ou 1 carte lue	0,008 F
1 carte perforée	0,014 F
Chaque step initialisé	4,08 F

1.1/3 - Travaux annexes

on-line Immobilisation de piste privée	0,29 F/1000 octets
Montage de papier spécial	14,10 F
Montage de bande	21,10 F
Montage de disque	62,30 F

2 - FOURNITURES

Cartes mécanographiques	17,60	F/mille	*
Papier 1 exemplaire	94,00	F/mille	*
Papier 2 exemplaires	188,00	F/mille	*
Papier 3 exemplaires	324,00	F/mille	*
Papier 4 exemplaires	470,00	F/mille	*
Location d'une bande	22,70	F/mois	
Location d'un disque 2316 ou équivalent	230,00	F/mois	
Location d'un disque 3336 ou équivalent	418,00	F/mois	
Stockage d'une bande (propriété client)	14,50	F/mois	
Stockage d'un disque (propriété client)	22,40	F/mois	
Perforation/vérification d'une carte programme	1,06	F	
Livraisons - courtes distances : PARIS et 92	54,00	F	*
- banlieue	70,00	F	*
Transmission MDS (non compris coût conversion et liaisons téléphoniques)	223,60	F/heure	
Conditionnement (pour la mise sous enveloppes, tarif spécial)	88,30	F/heure	
Saisie (tout calcul fait à la colonne ou à la carte nécessite l'établissement d'un devis)	84,60	F/heure	
Préparateur	123,30	F/heure	

* Les prestations signalées par astérisque(*) sont facturées en fonction du tarif en vigueur et ne subissent pas l'indexation consécutive aux variations des indices Syntec et P.S.D.

APPENDIX : TARIFFS

L. S.P.I.

- **TARIFF**

1,028

The basic tariff is 1028 FHT per point of usage (as calculated from the formulae given overleaf).

The basic tariff is increased as follows for fast turnaround.

Turnaround Time	Tariff Multiplication Factor
2 Hours	1.25
1 Hour	1.50
10 Minutes	2.00

- **VOLUME DISCOUNT**

The price per point reduces to a minimum of 0.85 (13.5%).

SOCIETE POUR L'INFORMATIQUE

TARIF DES PRESTATIONS DE TRAITEMENT

1ER JANVIER 1979

SOCIETE
POUR
L'INFORMATIQUE
STI

98 Bd VICTOR HUGO
92115 CLICHY - 739.94.40
S.A. au capital de 3.000.000 de Francs
R.C. PARIS B 712.045.756
GROUPE PECHINEY UGINE KUHLMANN

TARIF DES PRESTATIONS DE TRAITEMENT

I - INTRODUCTION

Les ressources mises en jeu par les prestations de traitement sont tarifées, soit directement en francs (portes d'accès en télétraitement, modems), soit en "points", le point ayant une certaine valeur en francs

Le point est l'unité d'oeuvre commune qui permet d'additionner les consommations des ressources tarifées en points : la consommation d'une ressource est mesurée d'abord dans une unité d'oeuvre qui lui est prop par une méthode de mesure spécifique ; puis cette mesure est convertie points.

Exemple : les lignes imprimées sont mesurées en nombre de lignes par un logiciel JES 2 ; une ligne imprimée sur un terminal à distance vaut 0,006 points. ; l'impression de 10 000 lignes correspond à la consommation de 60 points.

Remarque : coefficient correcteur de la mesure de consommation CPU

La mesure de consommation CPU effectuée par SMF ou la routine IMS est u mesure technique qui, pour un même traitement, peut varier dans le temp en fonction des évolutions technologiques des matériels et des logiciel

Afin de supprimer les effets de cette variation, la mesure technique ai effectuée, est affectée si nécessaire, d'un coefficient correcteur, fon de la nature des évolutions technologiques indiquées ci-dessus.

Dans tout ce qui suit, l'expression Tcpu, définira donc un temps techni affecté d'un coefficient correcteur.

II - RESSOURCES TARIFEES EN POINTS

DESIGNATION	UNITE d'OEUVRE (U.O)	METHODE DE MESURE	POINTS PAR U.O.
1. TRAITEMENT PAR LOTS			
. Unité centrale pour exécution d'une étape	heure fictive (1)	SMF	I 400+6,4k (2)
- Traitement de jour : majoration I0%		Programme	
- Priorité : majoration fonction de la priorité (après application éventuelle de la majoration JOUR)		Programme	
- Initialisation d'une étape	nombre	SMF	I (3)
. Opérations périphériques sur le Centre SPI (unités connectées aux unités centrales localement)			
- ligne imprimée	nombre	SMF	0,0095
- carte lue	nombre	SMF	0,0I0
- carte perforée	nombre	SMF	0,060
- montage bande	nombre	SMF	I0
- montage papier spécial	nombre	SMF	I0
. Opérations périphériques sur terminal sous JES 2 (unités connectées aux unités centrales à distance)			
- ligne imprimée	nombre	SMF	0,006
- carte lue	nombre	SMF	0,006
- carte perforée	nombre	SMF	0,006
2. TRAITEMENT EN TEMPS REEL SOUS IMS			
. Ressources fixes (par mois) :			
- PSB	nombre	Programme	7
- DBD	nombre	Programme	I4
- PGM	nombre	Programme	I3
- Module de RANDOM, non standard SPI	nombre	Programme	8
. Unité centrale pour exécution d'une transaction	heure fictive (4)	Routine IMS	2 600 (5)

(1) (2) (3) (4) (5) : se reporter à la notice explicative en fin de tableaux

DESIGNATION	UNITE d'OEUVRE (U.O)	METHODE DE MESURE	POINTS PAR U.O.
3. T S O			
. Unité centrale pour l'excution d'une étape	(1) heure fictive	SMF	2 800+I2,
. Durée de session (7)	heure	SMF	30
. TGET - TPUT (8)	nombre	SMF	0,0I
4. LOCATION DE SUPPORT			
. Bande magnétique (par mois) (9) :			
- conservée à la SPI	nombre	manuelle	I0
- conservée en permanence ou temporairement dans le local de sécurité	nombre	manuelle	20
. Cylindre résident sur unité 3350 (par mois) (I0)	nombre	manuelle	50

(1) (2) (6) (7) (8) (9) (I0) : se reporter à la notice explicative en fin de tablea

-> 1 cylinder = 500 K. bytes.

III - RESSOURCES TARIFEES EN FRANCS

DESIGNATION	UNITE d'OEUVRE(U.O)	METHODE DE MESURE	FRANCS PAR U.O.
1. LOCATION PORTES 3705 (par mois)			
. Liaisons spécialisées BSC :			
- Porte I34,5 bauds	nombre	manuelle	500
- Porte 300 bauds	nombre	manuelle	500
- Porte 600 bauds	nombre	manuelle	750
- Porte I200 bauds	nombre	manuelle	I 000
- Porte 2400 bauds	nombre	manuelle	I 500
- Porte 4800 bauds	nombre	manuelle	2 000
- Porte 9600 bauds	nombre	manuelle	4 500
- Porte I9200 bauds	nombre	manuelle	8 200
. Liaisons spécialisées VTAM :			
- Porte ≤ 4800 bauds	nombre	manuelle	4 000
- Porte > 4800 bauds			sur devis
. Liaisons CADUCEE BSC			
- Porte 2400 bauds	minute de fonctionnement	programme	0,95
- Porte 4800 bauds	minute de fonctionnement	programme	I,30
Facturation minimum mensuelle = 500 F			
. Liaisons CADUCEE VTAM			
- Facturation sur devis			sur devis
. Liaisons Telex			
- porte 50 bauds	heure de transmission	programme	20
Facturation minimum mensuelle = 500 F			

DESIGNATION	UNITES d'OEUVRE(U.O)	METHODE DE MESURE	FRANCS PAR U.
2. LOCATION DE MODEMS (par mois)			
. Modem en bande de base	nombre	manuelle	370
. Modem pour liaison grande distance :			
- 600 bauds	nombre	manuelle	400
- I200 bauds	nombre	manuelle	400
- 2400 bauds	nombre	manuelle	500
- 4800 bauds	nombre	manuelle	I 000
- 9600 bauds	nombre	manuelle	2 000
- Télégraphique I34,5 bauds	nombre	manuelle	250
- Autres vitesses ou dispositifs			sur devi

NOTICE EXPLICATIVE

(1) Le temps fictif unité centrale est la somme du temps fictif CPU et du temps fictif IO.

- le temps fictif CPU, exprimé en secondes et désigné par Tcpu, est le temps mesuré par SMF affecté du coefficient correcteur (voir Introduction Remarque).

- le temps fictif IO, exprimé en secondes et désigné par Tio, est obtenu par la formule

$$\text{Tio} = \frac{\text{Nombre d'EXCP} \times 25}{10^3}$$

Le nombre d'EXCP étant mesuré par SMF.

Le temps fictif unité centrale, exprimé en heures, est donc :

$$\frac{\text{Tcpu} + \text{Tio}}{3\,600}$$

(2) k = taille de la mémoire virtuelle utilisée dans l'étape et mesurée avec l'unité = 1024 octets.

(3) Le nombre de points N consommés par l'exécution d'une étape est donc donné par l'expression suivante :

$$N = \frac{\text{Tcpu} + \text{Tio}}{3600} (1400 + 6{,}4\ k)\ J \times Pq + 1$$

où :

a) 1400 + 6,4 K = nombre de points affectés à l'heure fictive

b) J = 1 si traitement de nuit
1,1 si traitement de jour.

Remarques :

- la nuit commence à 18h30 et se termine à 8h30
- tout job dont la première étape commence la nuit est facturé au tarif nuit
- un job déclaré pour la nuit passera éventuellement le jour si la file d'attente des jobs pour le jour est totalement vide. Il sera néanmoins facturé au tarif de nuit
- un job déclaré pour la nuit et qui n'est pas commencé le lendemain à 8h30, passera dès qu'il pourra ce même jour au tarif de nuit
- l'absence de demande explicite pour la nuit implique que le passage est demandé de jour.

c) Pq : est fonction de la priorité demandée (Pd) et est appliqué dans les conditions suivantes :

Priorité demandée Pd	Délai correspondant (1)	Valeur de Pq (2)
$5 \leq Pd < IO$	2 heures	I,25
$IO \leq Pd < I5$	I heure	I,50
$Pd = I5$	IO minutes	2

(1) il s'agit du délai qui s'écoule entre le moment ou le Job est disponible en file d'attente (fin de lecture ou libérat dans le cas d'un Job en Hold) et le moment où il est initialisé pour exécution.

(2) lorsqu'un Job n'est pas initialisé dans le délai correspond à la priorité demandée :

. si délai réel $>$ délai demandé, la valeur de Pq est cell du délai réel (ex. si Pd=11 et délai=IhIO ', Pq=I,25)

. si délai réel $\leq$ délai demandé réel, la valeur de Pq es celle du délai demandé (ex. si Pd=11 et délai réel=5', Pc

d) 1 = point affecté à l'initialisation d'une étape.

(4) Le temps fictif unité centrale est la somme du temps fictif CPU, du temps fictif IO et du temps fictif CALL DL 1

- les temps fictifs CPU et IO, exprimés en secondes et désignés par Tcpu et Tio, sont obtenus comme ci-avant en (1)
- le temps fictif CALL DL 1, exprimé en secondes et désigné par Tdl 1, es obtenu par la formule :

$$Tdl\ 1 = \frac{C_1 \times IO + C_2 \times 20 + C_3 \times 70 + C_4 \times 70 + C_5 \times I50}{IO^3}$$

où :

C_1 = nombre de CALL GET

C_2 = nombre de CALL INSERT ou REPLACE

C_3 = nombre de CALL DELETE

C_4 = nombre de CALL QUEUE

C_5 = nombre de "schedule" de MPP

Le temps fictif unité centrale, exprimé en heures, est donc :

$$\frac{Tcpu + Tio + Tdl\ 1}{3600}$$

(5) Le nombre de points N consommés par l'exécution d'une transaction est donc donné par la formule suivante :

$$N = \frac{Tcpu + Tio + Tdl\ 1}{3600} \times 2600$$

où 2600 = nombre de points affectés à l'heure fictive.

(6) Le nombre de points consommés par l'exécution d'une étape est donc :

$$N = \frac{Tcpu + Tio}{3600} (2800 + 12,8\ k) + 1$$

où :

a) 2800 + I2,8 k = nombre de points affectés à l'heure fictive

b) 1 = point affecté à l'initialisation d'une étape.

(7) La durée de session est le temps mesuré entre le moment de l'exécution de la commande de début de session (LOGON) et le moment de l'exécution de la commande de fin de session (LOGOFF).

(8) TGET : lignes entrées à partir d'un écran

TPUT : lignes reçues sur un écran.

(9) La bande magnétique : ce support est identifié par un numéro affecté par la SPI. Il est conservé en ambiance climatisée soit à la SPI, soit dans un local de sécurité où il pourra être stocké de façon permanente ou temporaire dans le cadre de rotations périodiques.

(I0) Le cylindre résident sur disque 3350 : il s'agit d'une capacité de disque, réservée par un utilisateur, accessible en permanence et pour laquelle une demande préalable d'allocation est nécessaire.

- l'allocation s'effectue par tranche minimum de I0 cylindres
- suivant le nombre de cylindres demandés, le délai d'obtention peut être fonction des délais du constructeur.

APPENDIX : TARIFFS

M. TELESYSTEMES

- TARIFF

  See attachment

- VOLUME DISCOUNT

  No information obtained.

telesystemes

DIRECTION DES SERVICES RESEAUX

10, Rue de Verdun
92100 – BOULOGNE
Tél. 604.65.65

ANNEXE N° 2

AU CONTRAT DE SERVICE

N°
Emis le

SERVICE CYBER 73.

PRIX

1 – TARIF DE CALCUL

L'unité de facturation de calcul est l'unité de ressources qui est déterminée de la façon suivante :

1.1. Calcul de la quantité de charge

Le calcul de la quantité de charge N fait intervenir deux facteurs :

Cp Temps d'utilisation du calculateur Central exprimé en secondes.

IO Temps d'entrée-sortie exprimé en secondes et correspondant à l'utilisation des canaux.

La quantité de charge sera calculée selon la formule :

$$\boxed{N = Cp + f \ (IO)}$$

La valeur de f variera selon le rapport $\frac{IO}{Cp}$ et comme suit :

$$\frac{IO}{Cp} \leqslant 2 \qquad f = 1,5 \times IO$$

$$2 < \frac{IO}{Cp} \leqslant 3 \qquad f = Cp + IO$$

$$\frac{IO}{Cp} > 3 \qquad f = 3,25 \ Cp + 0,25 \ IO$$

1.2. Calcul du coefficient de transfert de domaine

La taille mémoire, le nombre de disques amovibles et le nombre de dérouleurs demandés par un programme constituent trois paramètres permettant de définir les six domaines Ai suivants :

.../...

Disques	Bandes	Mémoire (mots de 60 bits)							
		0K	12K	24K	40K	56K	72K	88K	112K
		Equivalence Octal (mots)							
		0.	30.000	60.000	120.000	160.000	220.000	260.000	340.000
0	0	A_0	A_1	A_2	A_2	A_4	A_5	A_6	
0	1	A_0	A_1	A_2	A_3	A_4	A_5	A_6	
0	2	A_1	A_2	A_2	A_3	A_4	A_6	A_6	
1	3	A_2	A_2	A_3	A_4	A_5	A_6	A_6	
2	4	A_3	A_3	A_4	A_5	A_5	A_6	A_6	
3	5	A_4	A_4	A_5	A_5	A_6	A_6	A_6	
4	6	A_6	A_6	A_6	A_6	A_6	A_6	A_6	

La colonne est déterminée par la mémoire maximum demandée pour l'exécution du programme.

La ligne est déterminée par la plus contraignante pour la configuration des ressources bandes ou des ressources dispacks demandées par le programm

Exemple : Un programme demandant 48K mots, un disque amovible et deux bandes magnétiques, sera du type A_4.

A chaque domaine A_i est associé un coefficient de transfert K_i.

La valeur de ces coefficients est donnée par le tableau suivant :

K_0	K_1	K_2	K_3	K_4	K_5	K_6
0,5	1	1,14	1,4	1,64	1,83	2

.../...

1.3. Priorité

Plusieurs priorités P de prise en compte pourront être demandées par l'utilisateur pour chacun de ces programmes. La valeur des coefficients correspondants sera la suivante :

P_1 différé = 0,8

P_3 normal = 1

P_4 urgent = 1,5

INTERCOM interactif = 2

1.4. Détermination du nombre d'unités de ressources d'un programme

Le nombre d'unités de ressources T d'un programme sera calculé à partir de la formule suivante :

$$\boxed{T = N \times K \times P}$$

1.5. Prix de l'unité de ressources .... 1,46 F. HT.

2 - FICHIERS PERMANENTS

2.1. Mode de calcul

L'unité de facturation des fichiers permanents est l'unité de ressources. Le calcul des unités de ressources mensuelles de stockage et de sauvegarde des fichiers permanents est effectué d'après la formule suivante :

$$\boxed{S = \sum M \times 0{,}02}$$

dans laquelle :

s = nombre mensuel d'unités de ressources

M = nombre de PRU/jour en fichiers permanents

PRU = unité de base de stockage.
1 PRU est égal à 64 mots de 10 caractères, soit 640 caractères.

.../...

2.2. Prix de l'unité de ressources .... 1,46 F. HT.

3 - SUPPORTS MAGNETIQUES AUXILIAIRES

3.1. Disques amovibles (dispack)

Pour lecteur CDC 841, capacité : 28,5 M car.

Location mensuelle et stockage .... 160,00 F. HT./Mois

Stockage en milieu conditionné .... 107,00 F. HT./Mois
(disque appartenant au Client)

Coût unitaire du montage .... 39,00 F. HT./Mois

3.2. Bandes magnétiques (740 m)

Location mensuelle et stockage .... 41,00 F. HT./Mois

Stockage en milieu conditionné .... 12,70 F. HT./Mois
(bande appartenant au Client)

4 - TRAVAUX EN SERVICE BUREAU

Outre les coûts de calcul, de fichiers permanents et de supports magnétiqu auxiliaires définis dans les paragraphes 1, 2 et 3, les travaux d'entrée et sortie effectués dans les Centres de Calcul ou les Services Bureaux TELESYSTEMES sont facturés au Client d'après le barème suivant :

Lecture de cartes .... 1,60 F.HT. les 100 cartes

Impression .... 53,00 F.HT. les 100 pages imprin
(papier zoné 1 ex., fourniture comprise)

Perforation de cartes .... 12,70 F.HT. les 100 cartes
(fourniture des cartes comprise)

Listing de cartes....................... 3,30 F.HT. les 100 cartes

Tracé de courbes off-line sur traceur

CALCOMP 900/1136 .... 400,00 F.HT./l'heure

Les travaux effectués en Service Bureau font l'objet d'une perception minimale de :

26,00 F.HT. par job exécuté

APPENDIX : TARIFFS

N. TELSYS

- TARIFF

Note that there is no priority system at any time of the day or night which affects job price.
Price is a function of set up cost, CPU time, I/O time as print volume.

The rates are:

Item	Charge	Units
Set Up Cost	50.00	FHT per job
CPU Time - AS5	1.18	FHT per sec
- AS6	3.50	FHT per sec
I/O Time	12.00	FHT/1000 I/O Accesses
Printing	4.00	FHT/1000 lines

- VOLUME DISCOUNT

No information given.

telsys
INFORMATIQUE
S.A. au capital de 1 000 000 de F
SIREN 708 200 514 00014
APE 7704 - R.C. Pontoise 52 B

GARGES- LES- GONESSE, LE 28 FEVRIER 1979

INPUT
CINISWICK HIGH STREET
CHRIES WRIK

WEST LONDON

à l'attention de Monsieur KEMPT

Messieurs,

Suite à nos récents entretiens avec votre collaborateur Monsieur CHAPPEL et suite aux bench-marks effectués en OS/VS1 sur notre machine AS 6 ITEL, vous trouverez ci-dessous les paramètres et prix de chaque JOB :

JOB 1 :	JOB 1	50 francs HT
	CPU 4"	14 francs HT
	I/O 376	4,51 francs HT
	lignes imprimées 887	~~3,51~~ 3.55 francs HT

TOTAL : 72,0~~5~~6 francs HT

JOB 2 :	JOB 1	50 francs HT
	CPU 16"	56 francs HT
	I/O 1095	13,14 francs HT
	lignes imprimées 3459	13, 83 francs HT

TOTAL : 132,97 francs HT

JOB 3 :	JOB 1	50 francs HT
	CPU 32"	112 francs HT
	I/O 12302	147,62 francs HT
	lignes imprimées 4430	17,92 francs HT

TOTAL : 322,34 francs HT

.../...

GROUPE
20, boulevard de la Muette - 95140 GARGES-LÈS-GONESSE - Tél. : 986.96.49 - Télex : 696700

.../...

Nous restons à votre disposition pour la suite à donner à cette affaire,

Nous vous prions d'agréer, Messieurs, l'expression de nos sentiments distingués.

CL/sf. 5469

Christian LUCION